

JPRS-UCR-86-008

17 APRIL 1986

USSR Report

CONSTRUCTION AND RELATED INDUSTRIES



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17 April 1986

USSR REPORT

CONSTRUCTION AND RELATED INDUSTRIES

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CONSTRUCTION PLANNING AND ECONOMICS

PLANS FOR RECONSTRUCTION BASED ON PRODUCTIVITY, MECHANIZATION

Moscow EKONOMIKA STROITELSTVO in Russian No 2, Feb 86 pp 3-8

/Unattributed Editorial: "Time for Acceleration"/

/Text/ The work of the 27th Congress of the Communist Party of the Soviet Union commences in Moscow on 25 February 1986. Important documents have been submitted for all-party national discussion -- draft new wording for the CPSU Program and changes in the CPSU Regulations and in the Basic Directions for the Economic and Social Development of the USSR During the 1986-1990 period and for the Period Up To the Year 2000. In accordance with established tradition, the party maintains extensive and direct consultation with the people on the basic problems concerned with economic development and its foreign and domestic policies. This clearly reveals the role played by the masses in building the new society and the profoundly democratic nature of the Soviet state.

During the October (1985) Plenum of the CPSU Central Committee, which commenced a most important stage in preparing for the party congress, it was noted that the documents submitted for discussion by the party and people were of great political significance: they contain a discussion of the programmed goals of the party, the key problems of its general line, its economic strategy and the forms and methods for party work among the masses during this modern and exceptionally complicated and important segment of history, which to a large degree is transitional in nature from both an internal and international standpoint.

As is known, the April (1985) Plenum of the CPSU Central Committee and thereafter the conference in the Central Committee on the problems of scientific-technical progress furnished a thorough analysis of the existing situation and they advanced and validated the widely held concept concerning accelerated socio-economic development for the country and on this basis -- achieving new status for Soviet society from the standpoint of quality. Herein lies the root of the problem, it was emphasized during the October Plenum -- the very essence of our problems.

The party is today confronting our people with the concept of acceleration as it prepares for its congress. The acceleration concept is truly a pivotal point for all three documents submitted for discussion by the party and people.

In the section of the draft new wording of the CPSU Program entitled "Communist Prospects for the USSR and the Need for Accelerating Socio-Economic

Development," it was noted that the development of socialism into communism is determined by the objective laws governing the development of society, which cannot be ignored. Experience has shown that any attempts to forge ahead in the introduction of communistic principles, without taking into account the level for the material and spiritual maturity of society, are doomed to failure and may summon forth expenses of both an economic and political nature. At the same time, the CPSU bases its position upon the fact that sluggishness cannot be tolerated in the carrying out of urgent changes or in solving the new tasks. The party believes that definite unfavorable tendencies and difficulties occurred during the 1970's and early 1980's in connection with the country's development, despite the fact that undeniable successes were also achieved during this period. These tendencies and difficulties were associated to a considerable degree with the fact that changes in the economic situation and the need for bringing about profound changes in all spheres of life were not properly evaluated, nor was proper persistence displayed in carrying them out. This inhibited more complete utilization of the available potential and the advantages offered by the socialist system and it restrained forward progress.

The CPSU is of the opinion -- it is further stated in the draft new wording of the Program -- that under modern internal and international conditions, all-round progress for the Soviet society and its progressive movement towards communism can and must be achieved through an acceleration in the country's socio-economic development. This includes the party's strategic program aimed at bringing about qualitative changes in all aspects of life in Soviet society: radical renovation of its logistical base founded upon achievements of the scientific-technical revolution; improvements in social relationships, particularly economic relationships; profound changes in the essence and character of labor and in the material and spiritual living conditions of people; activation of the entire system of political, social and ideological institutes. Based upon an acceleration in the socio-economic development of Soviet society, new goals must be achieved in all areas -- economic, social, political and spiritual life.

An acceleration in the country's socio-economic development must bring about a qualitatively new status for Soviet society! This is the formula that expresses the essence of the party's modern program.

The draft Basic Directions for the Economic and Social Development of the USSR During the 1986-1990 Period and for the Period Up To the Year 2000 is closely aligned with the draft new reading for the CPSU Program. It defines more precisely the statutes of the Program and it translates them into the language of direct planning tasks, in conformity with a very important stage for carrying the Program out -- the 12th Five-Year Plan and the period up to the year 2000.

It is quite probable that no other like document in the past has been subjected to such study and criticism as the mentioned draft reading. The totality of the objective factors which influence in different ways the rates, proportions and effectiveness of the national economy were taken into account in a thorough manner. Firmness and decisiveness were displayed in counteracting those leaders who, in accordance with programs which existed earlier, attempted to

obtain more resources and less plans from the state. In opposing this line of thinking, a large role was played by a search for reserves, by the development of tense tasks for the five-year plan by the labor collectives and by an active position taken by the party organizations.

As a result of the work carried out, a plan was created and submitted for discussion which responds for the most part, according to an evaluation by the Politburo of the CPSU Central Committee, to the program requirements of the party with regard to accelerating economic growth and simultaneously solving such strategic tasks as improving national well-being, strengthening the economic potential and maintaining the defensive might of our homeland at the proper level.

In carrying out the strategic tasks for the forthcoming 15-year period, a very important role will be played by the 12th Five-Year Plan. It must serve as a turning point with regard to all of the trends for economic and social development of the country. The task of achieving the goals planned for the third millennium will depend upon how rapidly the change toward greater efficiency will be realized and the new technical reorganization of the national economy carried out. It should be emphasized that the plans for the next 15 years call for the creation of an economic potential that will be roughly equal in scale to that accumulated throughout all previous years of Soviet rule, an increase of almost twofold in national income and in the volume of industrial production and an increase by a factor of 2.3-2.5 in labor productivity. The results achieved will make it possible to double the volume of resources employed for satisfying the requirements of the people. The implementation of the social program planned will make it possible, during the next three five-year plans, to raise the standard of living of the Soviet people to a new level from the standpoint of quality.

As pointed out in the Basic Directions, the chief task of the 12th Five-Year Plan consists of raising the rates and effectiveness of economic development based upon accelerated scientific-technical progress, technical re-equipping and modernization of production, intensive use of the production potential created and improvements in the administrative system, the economic mechanism and in achieving, on this basis, further improvements in the well-being of the Soviet people.

It is significant to note that during the new five-year plan the increases in national income and in the output of all branches of material production will for the first time be obtained entirely on the basis of an increase in labor productivity. The appreciable reduction in material-intensiveness planned for the five-year plan will make it possible to convert the economy into a decisive source for satisfying the national economic requirements for additional material resources. The structural reorganization of the economy and the concentration of capital investments in behalf of the more important trends in national economic development will be carried out in a more energetic manner than in the past. Special emphasis will be placed upon the technical re-equipping and modernization of existing enterprises.

The principal task of capital construction consists of creating and accelerating the renovation of that fixed capital of the national economy to be used for

developing social production and solving social tasks and achieving a considerable increase in the effectiveness of construction production. Capital investments in the national economy increase over a five-year period by 18-21 percent and the volume of contractual work -- by 15-16 percent.

The effectiveness of capital investments must be raised, improvements must be realized in their reproductive and technological structure and material, financial and labor resources must be concentrated mainly on the technical re-equipping and modernization of existing enterprises and on erecting installations which influence scientific-technical progress and which solve social tasks.

A requirement will exist during the 12th Five-Year Plan for constructing and placing installations in operation in keeping with the normative schedules, for reducing considerably the number of projects being built simultaneously, for bringing the volumes for the construction inventory and unfinished construction to the normative levels and for reducing substantially the supplies of uninstalled equipment. The task has been assigned of commencing the construction of production installations only when full use is being made of the production potential of existing enterprises, when the regions in which the construction is to take place are supplied with the labor resources required, when new regions are being developed and also when it is required for the introduction of basically new technologies. The cost of construction per unit of capability placed in operation must be lowered and the quality of construction raised substantially. The all-round construction of projects of a production nature must be carried out and the timely erection and placing in operation of the apartment buildings and installations of a social-cultural and domestic nature called for in the plans must be ensured in a very strict manner.

In the draft Basic Directions, emphasis is placed upon the task of carrying out further industrialization of construction production, with the consistent conversion of it into a single industrial-construction process for erecting installations using plant-produced elements. Here an important role is played by a conversion over to complete deliveries to the construction projects of engineering and technological equipment in consolidated units and by an acceleration in the creation and introduction of a progressive technology and systems of machines and mechanisms which will ensure the complete mechanization of construction and installation work, especially under conditions involving the modernization of existing enterprises. In the case of finishing work, the plans call for the traditional labor-intensive processes to be replaced by modern industrial methods, for the volume of manual work to be reduced by roughly 25 percent, for a substantial increase to take place in the production of specialized construction equipment at enterprises of construction ministries and for an improvement to be realized in the structure of the construction materials being used.

The organization of construction production must be improved and the program aimed at consolidating the construction-installation organizations, reducing the number of excessive administrative elements, expanding the independence of construction-installation trusts and raising their responsibility for the timely placing in operation of capabilities and installations and improving the

results of economic activity must be continued. The task has been assigned of introducing into operations on a more extensive scale advanced labor forms and methods, developing the brigade contract method, consolidating the brigades and improving the organization of their work and raising the mobility of construction organizations for the erection, on a more rapid basis, of installations in uninhabited and remote regions.

The planning and construction organizations are displaying more responsibility for the scientific-technical level of construction output and greater interest in carrying out the technical re-equipping and modernization of existing enterprises. The plans call for measures aimed at further improving planning and estimates work, including raising the quality of the technical-economic justifications for construction and planning documentation and making extensive use in the plans of progressive scientific-technical achievements, resource and energy-conserving technologies and equipment, economic space-planning solutions, structures, materials and leading methods for organizing production and labor, with consistent reductions in the expenditures of material, fuel-energy and labor resources per unit of output. It is on this basis that a reduction must be achieved, in the plans for construction projects during the 12th Five-Year Period, in the specific indicators for the estimated cost of construction, including a national economic average of 4-5 percent for construction-installation work.

During the five-year plan, labor productivity in construction must be raised by 15-16 percent.

The year 1986 will play a special role with regard to the 12th Five-Year Plan -- in addition to being the first year of the five-year plan, it also represents the beginning of a qualitatively new stage in the development of Soviet society. The laws adopted during the 4th Session of the 11th Convocation of the USSR Supreme Soviet on the State Plan for the Economic and Social Development of the USSR and the State Budget for 1986 are of tremendous importance for both the present and future of our country, for each labor collective and for each Soviet family.

The 1986 plan reflects the party's strategic program for accelerating the country's socio-economic development and has important characteristics. An efficient rhythm must be achieved this year for the entire five-year plan: rates of development for the national economy are called for which, with a gradual increase in intensity in subsequent years, will ensure completion of the tasks for the five-year plan on the whole. The plan for the year was formulated with maximum consideration being given to the need for accelerating scientific-technical progress. It is oriented towards achieving a practical conversion over to intensive managerial methods and it calls for the extensive dissemination of new managerial methods which have proved their worth in a positive manner.

For the purpose of creating the prerequisites for accelerated economic development during the 12th Five-Year Plan and for the technical re-equipping of all branches of the national economy based upon leading equipment and technologies, the plan calls for a considerable increase in the rates for capital construction during 1986.

The plans call for state capital investments in the amount of 164 billion rubles and for all sources of financing -- 185.9 billion rubles, with a substantial increase compared to last year. In preparing the capital investment plan, a preference was shown for those branches upon which the rates for national economic development and scientific-technical progress are dependent. A considerable increase is taking place in capital investments in machine building, including in instrument making (by 55 percent), machine tool industry (by 42 percent), electrical engineering industry and chemical and petroleum machine building. Considerable importance is being attached to strengthening the basic branches of industry. Capital investments in branches of the fuel-energy complex will increase, including in the oil-drilling industry (by 31 percent), coal (by 27 percent) and electric power industry (by 24 percent).

For the development of those branches which support the implementation of the USSR Food Program, including housing construction for agricultural workers, 58.7 billion rubles worth of capital investments have been made available, a considerable increase over the figure for 1985. The plans call for a considerable increase in resources allocated for solving tasks established in the all-round program for developing the production of consumer goods and the sphere of services and for the development of all branches directly associated with satisfying the requirements of the population.

In conformity with the program for accelerating the technical re-equipping and modernization of existing enterprises, 37.4 billion rubles have been allocated in the plan for these purpose, or 23 percent more than was set aside in the plan for last year. The proportion of these funds, with regard to the overall volume of expenditures for production construction, will be raised to 40 percent.

The plan calls for capital investments and the resources of construction organizations to be concentrated mainly on underway construction projects and installations. The plans call for the placing in operation, by means of state capital investments, of 152.2 billion rubles worth of fixed capital. Using all financing sources, the placing in operation of apartment house dwelling space will amount to 114 million square meters, with more than 40 million square meters of this amount being for workers engaged in agriculture. The housing conditions for roughly 10 million persons will be improved as a result of implementation of the housing-construction program during 1986.

The scale for the achievements planned is imposing high requirements upon all of the construction and installation organizations. The construction ministries and departments must improve their management over subordinate organizations and achieve unconditional fulfillment of the established tasks. At the same time, measures must be developed and implemented which will in 1986 henceforth ensure the construction of installations strictly in keeping with the normative schedules.

The party associates successful solutions for the planned tasks with raising the role played by the human factor. A socialist society -- it is noted in the draft new wording for the CPSU Program -- cannot function effectively if new means are not found for developing the creative activities of the masses in all spheres of social life. The greater the scale of the historic goals, the more interest and responsibility must be displayed by the millions actively participating in achieving them.

During the session of the USSR Supreme Soviet which approved the planned tasks for the first year of the 12th Five-Year Plan, the following was noted: new development which occur in life today tend to arouse the Soviet people and activate their creative abilities. Again and again this has underscored the tremendous reserves and potential which are embodied in the socialist system.

It can now be firmly stated that the work is beginning to change for the better. But this represents only the initial steps. The country is located at the beginning of a planned path -- a complicated and tense path which requires the use of a creative approach for tasks which improve life and with purposefulness. Tremendous reserves and opportunities are available and thorough work must be carried out in order to ensure that they are placed in operation and a maximum return realized from them. This must be accomplished in connection with all aspects of economic and social development and particularly in those areas where the situation remains complicated and backwardness is being overcome only slowly -- including in capital construction, which is in need of decisive improvements.

The following fact clearly reveals the reserves that are still available for improving the situation in the branch. Everyone is familiar with the name of the initiator of the brigade contract method in construction, brigade leader of an all-round brigade attached to a production association (Zelenogradstroy) of Glavmospromstroy and two-times Hero of Socialist Labor Nikolay Anatolyevich Zlobin. In 1984, the output per worker in his brigade reached 43,400 rubles, compared to a country average of 10,000 rubles. This was an eminent achievement! Nor was this result achieved by Zlobin's workers considered to be a limit. This leading labor collective, which reduced the construction of each home by an average of a month compared to the norm, believes that the schedules can be reduced further by a factor of roughly 1.5 if the completion of the installations is organized in an efficient manner, if interaction with the sub-contracting organizations is improved and if the brigade is supplied with light mechanization equipment.

The socialist competition launched on an extensive scale for worthily preparing for the 27th CPSU Congress underscores the active support being provided by the builders for the program adopted by the party aimed at accelerating the country's development to the maximum possible degree. Here are some typical examples. The pilot complex of the Kvarto-5000 sheet mill was successfully placed in operation for the Izhorskiy Zavod Association -- a unique project of power engineering machine building and a construction project of primary state importance. This huge mill, which is more than 400 meters in length and weighs 5,500 tons, produces special strength sheet steel that ranges in thickness from 10 to 450 millimeters and is up to 5 meters in width: an obvious example of scientific-technical progress in action. The modernization of the Dalselmash plant was completed 50 days ahead of schedule and this made it possible for the machine builders to commence ahead of schedule the production of a new generation of grain harvesting combines on a caterpillar track. The next power unit (power rating of 800,000 kilowatts) at the Surgut GRES /state regional electric power plant/ was installed considerably ahead of the planned schedule; it operates on the basis of by-product gas from petroleum works in the central Priobye region. As a result, a considerable improvement has been realized in the power supply for the northern regions of the West-Siberian Petroleum and Gas Complex. It seems that the first trains have transited the impregnable rock

of the 2-kilometer Kodarskiy Tunnel of the Baykal-Amur Trunkline. The production complex of the largest poultry factory in the central Volga region, the Krotovskaya Poultry Factory with its capability for producing more than 10 million meat chicks and 7 million eggs annually, was placed in operation 3 months ahead of the planned schedule.

The entire course of the large party council with the nation convincingly underscores the fact that the very important theoretical and political documents raised for discussion and presented for examination by the 27th CPSU Congress are arousing complete satisfaction among the Soviet people. Active support of the party's strategic program -- support in word and action -- serves as a source of optimism and confidence in the fact that the correct path was chosen and that the plans will be fulfilled without fail.

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CSO: 1821/129

CONSTRUCTION PLANNING AND ECONOMICS

COMPETITION FOR INVESTMENT FUNDS DELAYS CONSTRUCTION PROJECTS

Moscow EKONOMICHESKAYA GAZETA in Russian No 50, Dec 85 p 8

[Article by M. Burov, senior expert in the Department of Construction and the Construction Industry of USSR Gosplan: "Why Are Resources Being Dispersed?"

[Text] One shortcoming in construction continues to be a dispersion of forces and resources among numerous projects. Importance is attached to the fact that the draft basic directions call for an increase in the effectiveness of capital investments based upon construction and the placing in operation of projects within the normative periods, a reduction in the number of installations being built simultaneously and raising the volumes of the construction stockpile and unfinished construction to the normative level.

In order to combat these shortcomings, one must be familiar with their causes. Let us try to analyze the existing situation.

A dispersion of capital investments often occurs as a result of the leaders of some enterprises, organizations, ministries and departments employing a departmental approach in carrying out their work. They request funds for preparing a construction site or for carrying out zero cycle operations, in the belief that once the money has been allocated for a project this year it will also in all probability be allocated next year. Yes and the local organs do not always take into account the requirements for balancing the plans for contractual work with the capabilities of the construction organizations from a territorial standpoint.

And as a result, construction operations prolonged over an extended period of time occur. For example, the erection of purification installations at the Pitkyaranta Cellulose Plant in the Karelian ASSR is being carried out in a very unsatisfactory manner; the plans called for these installations to be placed in operation in 1980. Each year, USSR Minlegbumprom /Ministry of the Timber, Pulp and Paper and Wood Processing Industry/, owing to a dispersion of capital investments, fails to allocate sufficient funds for these nature-preserving installations. Construction is carried out over a period of more than 9 years, against a norm calling for only 32 months. The Ryazanstroy Association has been erecting purification installations in the city of Mikhaylov since 1972. Against a normative period of 16 months, the construction of these installations has already been in progress for 13 years.

Such "long term" construction projects are favored by builders, who include them in their contractual work plans so that they can reach the required volume for their annual plans and retain the established wage group.

During the current five-year plan, as a result of the carrying out of organizational and economic measures, a reduction took place in the level of unfinished construction and the number of projects being built simultaneously decreased somewhat. However, for the country as a whole and also for each ministry, the amount of "unfinished construction" still did not reach the norm.

Unplanned construction operations are causing great harm with regard to the concentration of capital investments in the more economical directions. From a formal standpoint, this is forbidden. But actually? With the tacit consent of local party and soviet organs, unplanned projects do in fact exist. For example, the Main Administration for Foreign Tourism of the Council of Ministers for the Armenian SSR, under the guise of a conference hall, is building a new theatre building at an estimated cost of 3.5 million rubles. In Alma-Ata, the construction of a two-story administrative building for the Yuzhelevatormaletroy Trust is being carried out under the guise of capital repair of fencing for one of the installations and this is being done in the absence of approved technical documentation and outside the plan.

The absence of approved all-round schedules for the distribution and construction of installations during the immediate future and from a territorial standpoint is also promoting to a considerable degree a dispersion of capital investments. In the interest of achieving a balance between the projects planned and the capabilities of the construction organizations, USSR Gosplan, in its letters dated 28 March 1984 (No. BL-460/46-294) and 30 August 1985 (No. LB-1487/46-975), recommended the creation, attached to union republic gosplans and kray and oblast planning committees, of special groups for the complete working up of the tasks planned, with these groups being responsible for preparing conclusions on the totality of the requests by all clients engaged in planning construction in a given territory. In carrying out this work, it is considered advisable to establish the fact that the normative schedules for the duration of construction must be taken into account in a very strict manner when determining the amounts of the annual appropriations for each specific project.

In addition, two indicators must obviously be approved during the course of planning: the construction schedules and the estimated cost of the projects. The placing in operation of installations which are of paramount state importance is presently being planned by the directive organs. In the case of the remaining installations, the plan is prepared by the contractor and client within the capital investment limits allocated for the clients. Moreover, observance of the normative schedules for construction must be viewed here as a mandatory requirement. A long-term norm for the assignment of profits from the particular installations and complexes for the budget must be approved for the construction organizations. The wage fund and the requirements for the construction materials needed must be determined based upon the estimates approved for construction of the installations and complexes.

Under these conditions, a construction organization can operate on a cost accounting basis and in accordance with the principles of self-repayment. For

it is precisely self-repayment and economic independence that can serve as the "drive belt" for raising the effectiveness of construction production. Only under conditions of cost accounting will the need for carrying out the work in a cautious manner disappear and the campaign for intensive development become an internal requirement of the labor collectives.

Under such conditions, the work of construction collectives requires the organization of construction production in accordance with the rules for the technological carrying out of operations, it interests the builders in lowering the cost of construction, it requires the introduction of a leading technology and leading methods for organizing labor and it will promote an increase in the responsibility of all those participating in the investment process, in matters concerned with eliminating a dispersion of capital investments. Positive experience is already available in this regard in work carried out by large construction organizations in Belorussia and Lithuania and in Moscow and Leningrad oblasts.

At the present time, as is known, two-year continuous planning has been introduced for the placing in operation of production installations. This form of planning promotes the rhythmic placing in operation of installations. However, it is unfortunate that many client-ministries have turned out to be unprepared for this work, the "2 years for placing installations in operation" turned out to be very low and 53 percent of the installations initially scheduled to be placed in operation were removed and replaced by others.

The very problem of uniformity in the placing of installations in operation by periods of the year has to a considerable degree brought about a substantial dispersion of capital investments among numerous construction projects and is disturbing all those who are associated with construction. This has been discussed at all levels and still no substantial change has taken place in the situation. In 1985, 67 percent of all start-up capabilities were employed during the 1st quarter and naturally it was once again impossible to ensure the placing in operation of all capabilities. There were several reasons for this situation, both subjective and objective.

The "simplest" of these included: weak organization of the work of the builders, insufficient capability for the construction organizations and, as a result, the absence of a normative inventory at the beginning of the start-up year. But when you begin to analyze in detail the situation that was created, a whole series of reasons of an objective nature appears:

-- the equipment and some types of materials are allocated only during the start-up year and hence they are delivered to a construction project at best during the 2d and 3d quarters and thus they predetermine the schedule for placing the project in operation -- during the 4th quarter;

-- a client does not wish to accept an output production plan for the start-up year and he uses the "illegal" products produced by the newly created capability for reflecting in his report a higher indicator for output-capital ratio;

-- the absence of start-up complexes among the clients or a conscious lowering of their value by the client-ministries when planning marketable construction output for the contractual ministries.

How can these barriers be overcome? First of all, in the interest of achieving uniform placement of installations into operations throughout the year and the timely provision of equipment for start-up projects during the first 6 months, the clients should simultaneously be provided with a set of ordered documentation for the start-up projects for the year planned and the supply organizations and USSR Gosplan should be provided with documentation for those projects scheduled to be placed in operation during the first 6 months of the year following the one being planned.

Secondly, responsibility for carrying out the plan for marketable construction output must be the same for both the contractor and the client.

Only then will it be possible to achieve a noticeable reduction in the number of installations being erected simultaneously and uniform distribution for the schedules for placing them in operation by quarters of the year.

Certainly, all of this work must be promoted to a considerable degree by a strengthening of state, labor and executive discipline in each element of the national economy.

The task assigned by the party and government for sharply shortening the construction schedules must be solved based upon a need for completing construction projects within the course of 2-3 years. Success can be achieved only on the basis of energetic, harmonious and hard work accompanied by firm planning discipline.

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CSO: 1821/106

17 April 1986

CONSTRUCTION PLANNING AND ECONOMICS

RSFSR GOSSTROY CHAIRMAN ON URBAN, RURAL DESIGN, CONSTRUCTION

Moscow NA STROYKAKH ROSSII in Russian No 1, Jan 86 pp 2-8

[Article by Chairman of the RSFSR State Committee for Construction Affairs S. Sabaneyev: "A Multidimensional Problem Which Requires a Comprehensive Approach"]

[Text] At the April (1985) CPSU Central Committee Plenum Mikhail Sergeyevich Gorbachev particularly emphasized that "the acceleration of scientific and technical progress and the increase of production efficiency is inseparable from the decisive improvement of product quality. Quality and once again quality--that is our motto today. Having solved the problem of quality, it is also possible to solve the problem of quantity." What was said also fully applies to housing and civil construction--one of the most important directions of the strategic policy of the party of steadily increasing the well-being of the Soviet people.

The CPSU Central Committee and the Soviet Government in recent years have adopted a number of important decrees on vital questions of capital construction. This predetermined the positive trends in construction on the territory of the RSFSR. As compared with the preceding five-year plan, the placement of fixed capital into operation has increased substantially. The rate of housing construction was constantly high and, what is especially important, the construction of housing and social and personal facilities in the countryside increased significantly.

At the same time a fifth of civil facilities are being placed into operation with a low quality, the majority of which are being turned over in December. Annually the labor of about 100,000 workers is essentially being wasted on the elimination of this defective output, and the country fails to receive nearly 4 million square meters of housing. The low quality of the constructed buildings also increases substantially the operating costs, shortens by one-half the overhaul period, leads to significant losses of heat and excessive consumption of fuel and power, and creates uncomfortable living conditions.

At the present stage the problem of quality is connected not only with the need to increase the technical level of the performance of construction and installation work, but also with the completeness of the development, its expressiveness and diversity, engineering and transportation service, that is,

with the creation of a sound habitat of man and the provision of normal conditions for the labor, daily life and relaxation of the population.

An increase in the quality of housing and civil construction is a multidimensional problem, the solution of which requires a comprehensive approach and at the same time a substantial qualitative change of all its components, from planning to the placement of facilities into operation. One such factor is the scientifically sound drafting of preplanning and design and layout documents and the assurance of their implementation.

An important role belongs to the regional layout [rayonnaya planirovka], which is supposed to substantiate and coordinate in the best manner the dispersal, distribution, and development of various sectors of the national economy on the territory of specific administration and economic regions. The implementation of the designs and plans of the regional layout, as the experience gained in Moscow, Vladimir, Kemerovo, and Yaroslavl Oblasts, Stavropol Kray, the Yakut ASSR, and a number of other regions confirms, ensures the increase of the quality and completeness of the building up of cities and settlements, the improvement of rural settlement with fewer expenditures and in a shorter time, and a saving of capital investments.

At the same time, contempt for these documents leads to serious errors in the distribution of productive forces, the upsetting of the economic equilibrium in economic activity, the excessive growth of large cities, and a lag in the development of small and medium-sized cities and workers' settlements. Analysis shows that of 750 small cities only 100 underwent development industrially. The remaining 650 do not have for the present the possibility of comprehensive development, the improvement of the architecture, and the creation of a sound and harmonious habitat. The need arose long ago to make the regional layout not a recommended document, but a mandatory component of state planning regulation when forming the system of the settlement and the entire socioeconomic development of territories.

The master plans of cities and the plans of the detailed layout and construction of residential regions and settlements are of no less importance in the achievement of a high-quality residential environment. In recent years some gains in the treatment of ensembles of residential complexes, public centers, embankments, and the architecture of gardens and parks have been made in the design and construction of cities and villages of the RSFSR. The formation of the housing systems of Volgograd and Ufa, Petrozavodsk and Sverdlovsk, Murmansk and Brezhnev, Chaykovskiy and Sosnovyy Bor, Vladimir and Yaroslavl, Novgorod, Kostroma and others can serve as positive examples. The feasibility study of the unified master plan of Leningrad and the oblast was recently considered and approved. The experience of the construction on the basis of an urban development contract of Yaroslavl, Luga, and Tosno also merits attention.

At the same time the state of affairs in the area of the drafting and implementation of master plans for the present cannot satisfy us. Whereas the technical and economic aspect in them has become more complete, the theme of architecture and imagery has been lost. Many serious miscalculations and errors are being made which adversely affect the organization of the life and

way of life of the population and which decrease the effectiveness of the spent assets. Thus, in the implementation of the master plan of Ivanovo more than 4 million square meters of housing were built in the city, but not a single residential or public complex in response to modern requirements or architectural ensemble was completed. There are still many cases of the location of housing in zones of public health hazard, next to industrial enterprises and airports (in Tomsk, Krasnodar, Groznyy, Orsk, Gagarin) or, on the contrary, of production facilities on development territories (in Novorossiysk, Kostroma, Sochi, Volgograd).

The construction of transportation structures, engineering facilities and service lines lags greatly behind the pace of the building of housing, which is giving rise to disproportions in the formation of the urban environment. In Irkutsk, for example, the lag in the development of engineering systems is so great that for the fulfillment of the program of housing construction during the 12th Five-Year Plan temporary boiler houses and treatment facilities will have to be built. A hypertrophied increase in the sizes of sites and main lines is occurring, which leads to irrational use of urban land, the upsetting of the scale of development, and additional inconveniences.

In speaking about the qualitative aspect of urban development, it is also impossible to avoid the theme of the preservation of a valuable architectural heritage, the connection between the new and the old, the surrounding nature, and the housing system being newly developed. Vladimir and Suzdal are good examples of this. But there are examples when callousness, disrespect of history and heritage and low standards in management lead to results which are difficult to correct. In Bogoroditsk of Tula Oblast a palace-park ensemble with a cascade of ponds was built in the 18th century. All of this was done in the best traditions of classicism. The talent of outstanding figures of Russian culture--the architect I. Starov and agronomist A. Bolotov--was invested in this. During underground mining of coal and cave-ins of the ground one of the ponds was destroyed, the water was drained from another, while the main one became a settling pond of discharged, untreated shaft water. The surrounding large forests and access roads were ruined.

For the increase of the qualitative level of urban development the RSFSR State Committee for Construction Affairs is completing the drafting of a comprehensive program for the improvement of urban development planning for the 12th Five-Year Plan. A program of the development of small and medium-sized cities of the RSFSR has also been drafted jointly with the RSFSR Gosplan. The implementation of these programs has begun.

The monotony of the mass housing system is causing profound anxiety. The appearance of our new cities and villages, of residential regions in old cities, streets and squares, of apartment houses and objects of mass construction and their improvement do not meet the increased technical and esthetic demands of the present. And the block-section method, which became the basis of the building of mass housing, without the taking of substantial additional steps and the consideration of local conditions does not make it possible to solve the problem of diversity and expressiveness. The search for the improvement of the quality of the housing system and the increase of the

diversity and expressiveness of architecture should be carried out on the basis of the extensive enlistment of local creative forces and the use of the local base of the construction industry and with allowance made for the regional peculiarities and traditions.

The reform of the established methodology of design, when the standard design will be developed by a local institute, while the norms and typological principles will be developed by the TsNIIIEPs [Central Scientific Research Institute of Experimental Planning], remains important in this work. The joint work of the Grazhdanproyekt institutes and house-building enterprises in Sverdlovsk, Kuybyshev, Cheboksary, Murmansk, Vladimir, Petropavlovsk-Kamchatskiy, Neryungri, and other cities, which makes it possible to increase the architectural expressiveness of buildings and the technological feasibility of the design and space-layout decisions and leads to a decrease of the grades of items, the improvement of the technology, and the increase of the use of the capacities of house-building combines by 10 percent, confirms the correctness of such a direction.

It is necessary to correct the current, obviously abnormal situation, when about 70 enterprises of large-panel house building with a capacity of 10 million square meters, which are operating on the territory of the RSFSR, are continuing to produce apartment houses of obsolete series. Here the USSR Ministry of Power and Electrification (12 enterprises) and the USSR Ministry of Industrial Construction (16) are in the lead. About 30 percent of the enterprises of large-panel house building are limiting their range to 2-3 block-sections. It is possible to build only representative houses from such a set.

Large reserves in the increase of the quality of panel buildings and the expressiveness and diversity of the housing system are to be found in the improvement of the finish of external wall panels. The facades of about half of the houses in the cities of the RSFSR are finished with ceramic and glass tiles with a very limited color range, while a third of the buildings are finished with decorative concrete and stone-like materials with a pale surface finish. But positive experience in this direction exists in Moscow, Murmansk, Sverdlovsk, and other cities.

The problems of rebuilding the countryside are acquiring particular importance. Good experience in the development of populated rural sites in recent years has been gained in Gorkiy, Saratov, Sverdlovsk, Kalinin, and Rostov Oblasts and Krasnodar and Stavropol Krays. The 11th Five-Year Plan for construction in the countryside was characterized by an increase in the level of the architecture and the mass introduction of farmstead houses. This required the revision of the master plans of rural settlements. The first steps were taken in their comprehensive development and engineering equipment. At the same time, attention to questions of economics is still inadequate, the monitoring of the development and use of standard designs is poor, and the quality of rural construction is low.

Each year the volumes of construction are shifting more and more to the eastern and northern regions of the RSFSR, where a special approach to the solution of engineering and technical problems in building and operating facilities is required. The quality of construction here first of all is connected with the reliability and stability of the load-bearing components, which are being erected on permafrost, and with the decrease of heat losses at facilities. However, the basic standard design of the apartment house of series 122, which is being realized for the northern regions by the Leningrad Zonal Scientific Research and Design Institute of the Standard and Experimental Designing of Residential and Public Buildings, has been undergoing modification too long and in isolation of local organs. The Sever-2005 Comprehensive Scientific and Technical Program, which was formulated from the standpoint of northern priority and the main goal of which consists in the elaboration of the most advanced urban development and engineering and technical approaches, which ensure the greatest effectiveness of capital investments in the regions of Siberia, the East, and the Arctic and the best conditions for living and daily life of northerners, can serve as an important document in the solution of many of these problems.

The acceleration of scientific and technical progress and the introduction of its achievements in practice are making it possible to increase significantly during the 12th Five-Year Plan the output of advanced construction materials and components: the production of items made of arbolite will increase by threefold, cement-chip slabs--by sixfold, wall blocks made of cellular concrete--by five- to sixfold, fiber glass roofing material--by 4.5-fold, parquet paneling--by 1.5-fold, effective polymer materials for floors--by 1.5- to 2-fold, and so on. Capacities for the production of extruded asbestos cement and asbestos silicate panels, pearlite fiber and mineral wool slabs, and fiber glass matting will be created and expanded. Gypsum, aerated concrete, and laminated wood components will be used more extensively. New efficient types of insulation will appear.

The increase of the efficiency and quality of construction is directly dependent on the acceleration of the introduction in practice of the latest achievements of science and technology and advanced domestic and foreign know-how. The plans of the development of science and technology should become an important tool in the solution of this problem. So far the attitude toward them has been insufficiently demanding. Many items of the plans in practice did not have any novelty and were shifted from one plan to another, while with respect to those items, which actually were such, the volumes of introduction were extremely negligible. It is impossible to tolerate this any longer.

As before, much attention will be devoted to prefabricated large-panel house building, the share of which in the RSFSR came on the average to 60.8 percent. It is highest in the USSR Ministry of Construction (81.3 percent). The tendency for the use of the capacities of large-panel house building for the republic as a whole to decrease is cause to worry. In the RSFSR Ministry of Rural Construction and the RSFSR Association of Interkolkhoz Construction Organizations they are being used at the level of approximately 60 percent.

The periods of the introduction in the necessary amounts of frameless large-panel public buildings are being dragged out. For the present their share in construction comes to about 2 percent. The scale and geography of the use of prefabricated structures of engineering equipment with a modular configuration, in particular, treatment facilities like the "blokompakt" and "struya" [the spurt], boiler plants, water towers, heating stations, and so forth, are extremely small.

Monolithic house building on the basis of advanced methods of erection of buildings should hold a special place. Along with extensive possibilities to express an architectural idea it makes it possible to achieve higher technical and economic indicators than in large-panel construction.

The creation of a unified construction industry conveyor, which ensures the performance of construction and installation operation in the greatest possible amounts under plant conditions and the delivery in complete sets of finished components or buildings as a whole, which is conducive in the greatest degree to the fundamental increase of the quality of construction, will be the general direction.

The state of the organization and technology of construction work has an enormous influence on the efficiency and quality of construction. The study of the experience of the comprehensive development of residential tracts in Krylatskoye, Gatchina, and Cheboksary makes it possible to draw the conclusion that detailed, purposeful preparation of construction work, efficient organization of the complete supply of construction projects, and the performance of construction and installation operations precisely in conformity with the required technology and with the use of sets of machines and devices, which ensure the continuity of technological processes and the decrease of manual labor, unite all of them. Today the development of residential microrayons as start-up complexes is being carried out in Leningrad, Sverdlovsk, Yaroslavl, and Vladivostok. The formation of urban development complexes in another 63 cities is envisaged during the 12th Five-Year Plan.

The changeover everywhere to comprehensive flow construction on the basis of continuous planning and the completion of the establishment and strengthening of the services of the sole client is a most important direction in the area of the organization of construction, which ensures the increase of its quality. In the RSFSR last year this method was used in more than 110 cities. One-third of the apartment houses were built in accordance with flow technology. By means of the careful preparation of the entire construction conveyor, the observance of the norms of construction under way, and efficiently organized material and technical supply, the smooth placement of projects into operation is being ensured and the completeness of development and the quality of the buildings being erected are increasing.

Continuous planning and flow construction create the most favorable conditions for the extensive introduction of the brigade contract, which, having become the general direction in the improvement of the organization of labor, has gained universal recognition. The amount of work, which is being performed on the territory of the RSFSR by cost accounting brigades, has reached

47 percent. A characteristic trait of the brigade contract is the dynamism of its development. The work experience of the multiple-skill cost accounting brigade of V. Kalmykov from Trust No 94 of the Vladimir Territorial Construction Administration of the USSR Ministry of Construction, which is building apartment houses of the farmstead type in the countryside, attests to this. Since 1982 labor productivity in it has increased by 25 percent and reached last year 25,000 rubles per person. During this period the brigade turned over for operation 111 apartment houses with only high ratings.

In many ways the quality of construction depends on the occupational skill of workers, their assiduous, "practical" attitude toward equipment and tools and the use of materials, as well as on the stability of personnel. This is one of the most urgent problems today and it is solved successfully precisely in the case of the brigade contract. However, the level of its introduction for the present is inadequate. The basic reasons for this are the shortcomings in the engineering preparation of production, the organization of the supply of complete sets of production technological equipment, planning, and accounting. Now the task is to introduce in every possible way a new, more advanced form of the brigade contract--the comprehensive flow brigade contract, using in this case competition according to the principle "The Workers' Relay Race."

In recent years many valuable initiatives have appeared at the construction projects of the RSFSR: the people of Sverdlovsk--to do more with fewer personnel, the people of Chelyabinsk--to build projects with a decrease of planned material and labor expenditures per assimilated ruble of capital investments, the people of Moscow--to turn over houses with a guarantee passport of quality, the people of Leningrad--to finish houses in accordance with the orders of the new tenants with the enlistment of their assets. The experiments on the construction and turning over of projects to the client "turnkey," as well as on the basis of a "stable" construction cost, which are being conducted respectively in the RSFSR Association of Interkolkhoz Construction Associations and the RSFSR Ministry of Rural Construction, are aimed at the further improvement of the forms and methods of the organization of construction.

At the same time the study and dissemination of advanced know-how and the provision of the necessary assistance in conducting the experiments by interested ministries and departments leave much to be desired. In this connection it is necessary to devote particular attention to the construction projects and organizations and enterprises of the construction industry, which are fighting for the title of model ones, turning into a school of advanced know-how and high standards of construction work. On the territory of the RSFSR there are 33 such construction projects and enterprises. Apparently, it is also advisable to include among them the construction of a number of microrayons and settlements.

Unfortunately, at many of our construction projects for the present the organizational and technical level of production is still low, the achievements of science, technology, and advanced know-how are being introduced slowly in the practice of design and construction. Suffice it to cite the following example. The average shift output of plasterers in the

country comes to approximately 10 square meters, that is, half as much as in the leading brigades. But even in the case of such indicators one rarely has occasion to see surfaces which have been made in conformity with the technical norms.

The present period is characterized by a shortage of construction workers, a large turnover of personnel, and the decrease of occupational skill. It is necessary to oppose to this a great plant readiness of items, the increase of the level of mechanization of operations, the decrease of manual labor, the introduction of more advanced technological processes, the changeover to a technology of the performance of jobs by the method of simplest operations, that is, the carrying out of construction with complete sets, which are ready for use and which the worker given the appropriate skills with the aid of the necessary accessories and tools could install without difficulties in the projected position.

The state of the industry of industrial construction components and materials in the RSFSR is not ensuring the required architectural level either with respect to the quality of the output being produced or with respect to the volume of its production. Brick remains a serious problem. Its production is decreasing, while about half of the red brick being produced is defective. About 15-20 percent of the need for face brick is being met. Given today's pace of the renovation of this sector the situation will be corrected only in 15-20 years. It is impossible to tolerate this.

So far on the territory of the republic there is no production of colored cement, with the exception of the white cement which is produced by the Shchurovskiy Plant. Various types of glass: colored, sheet, wire, and patterned glass, colored porous glass, and large colored glass blocks can serve as a real adornment. However, we see them, for the most part, at exhibitions. Construction workers are experiencing an acute shortage of metallic anodized and wood-metal casements with the appropriate coat of paint. The production of high-quality plumbing fixtures, linoleums, and wallpapers is inadequate.

The shortage of produced materials and items is being aggravated by low product quality. The steady tendency for the quality of woodworking items, rock materials, and brick to decrease is being observed. Thus, the average brand strength of brick in the past 2 years has decreased by nearly 2 percent. The situation with the quality of reinforced concrete components is especially bad at the enterprises of the USSR Ministry of Power and Electrification, the USSR Ministry of Industrial Construction, and the RSFSR Association of Interkolkhoz Construction Organizations.

The further increase of the level of industrialization and of the efficiency and quality of housing and civil construction is inseparably connected with the utmost saving of all types of resources. In this connection the use of industrial waste products for the production of construction materials and the improvement of their quality on the basis of new technologies, particularly the ash of heat and electric power plants for the production of concretes, the waste products of wood processing for the production of arbolite, and blast furnace slags for the output of high-quality materials, is

acquiring great importance. All this has the nature of a waste-free technology and is of great importance as nature conservation measures. Quality control is an important component of the construction process. A special role in its implementation belongs to the extradepartmental organs of the State Architectural and Construction Control, which are called upon to evaluate objectively the qualitative level of the projects being turned over. Their activity in recent years has been stepped up. In connection with flaws in workmanship and the low quality of work in 1984, 2.5-fold more total area of apartment houses was excluded from the statistical returns than in 1983.

Violations of the established procedure of the acceptance for operation of built projects and a low quality of work occurred in Altay Kray, the Bashkir and Buryat ASSR's, and Arkhangelsk, Irkutsk, and Moscow Oblasts.

The qualitative level of construction is especially low at the organizations of the USSR Ministry of Construction in the Far East and Transbaykal Regions, the USSR Ministry of Power and Electrification, and the RSFSR Ministry of Housing and Civil Construction. It is necessary to resolutely put a stop to such cases by increasing the role and responsibility of state acceptance commissions and the responsible officials of construction organizations for the strict observance of prevailing legislation.

The experience of the Chuvash ASSR, where for the purpose of improving the structure of the local organs of the State Architectural and Construction Control eight staff units were transferred from subordination to the rayon soviet executive committees to a unified republic inspectorate with its subordination to the Chuvash State Committee for Construction Affairs, attests to the possibilities of the highly efficient work of the State Architectural and Construction Control. The improvement of the structure of the organs of the State Architectural and Construction Control is also being carried out in Kostroma, Smolensk, and other oblasts. However, as a whole this positive experience is still being used quite poorly.

At the same time it is necessary not only to intensify the work of the organs of GASK [State Architectural and Construction Control], but also to step up the activity of all other services which check quality and have a detachment of many thousands of inspectors. These are, first of all, the technical construction inspectorates, laboratories, and services of technical and authors' supervision.

Given all the diversity of factors which influence the quality of construction, production control and the increase of the responsibility of every brigade and every worker for the results of their work are the main factors. Incoming, operational, and acceptance control--the components of the system of production control--should become the basic types of control, since they function at the local level and give warning in good time of the appearance of defective output and low work quality.

The questions of increasing the qualitative level of construction in many ways are closely connected with the activity of the Grazhdanproyekt [Civil Design] institutes--the basic bearers of urban development policy locally. On this level one should note the initiative of the collective of the

Kostromagrazhdanproyekt Institute, which in response to the appeal of brigade leader-construction workers to the newspaper PRAVDA adopted socialist obligations and is implementing measures which are aimed at the increase of the quality of designs and the provision of practical assistance to construction organizations. Now 60 institutes are already using the advanced work experience of the people of Kostroma in practice.

If one looks at the work of the main construction partners through the prism of the investment process and evaluates the quality of their work, it turns out that the client is to blame most of all for the increase of the estimate cost and the reapproval of designs. In accordance with the results of an analysis made of 70 construction projects, the client understated the capacity of the enterprises and changed the range of products in 18 percent of the cases, while in 14 percent of the cases he reduced the cost of construction in order to keep within the established limits. Due to the dragging out of the construction period, for which planning organs and contractors are half to blame, the expenditures increased by 23 percent. In 10 percent of the cases the designers, who made mistakes in the designs and estimates, are to blame. Some 23 percent of the increase of the cost is connected with the increase of the cost of equipment, which was not backed by the increase of its productivity. Thus, the quality of work of the clients, contractors, planning organs, and designers leaves much to be desired.

The problem of the radical improvement of quality is very difficult. It requires great organizing efforts, capital investments, and time. In working on it, one should be guided by not only today's, but also tomorrow's standards, since we live in the age of the rapid development of scientific and technical progress.

Everyday concern for quality is the task of not only the executives of construction and design organizations, party and soviet organs, ministries, and departments. The efforts of engineers, technicians, foremen, and workers should be aimed at the utmost increase of the quality of construction. In giving organizational and technical measures as the basis of this work their due, it is necessary to remember that people play the leading role. Very, very much depends on the skill, their ability to master technology, and their sense of responsibility for the job assigned to them. "Quality and again quality--that is our motto today." Let this appeal, which was heard at the April CPSU Central Committee Plenum, become for every collective and every Soviet worker an urgent assignment on the worthy greeting of the 27th Congress of the Communist Party of the Soviet Union.

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CSO: 1821/128

CONSTRUCTION PLANNING AND ECONOMICS

ORGANIZATION OF ECONOMIC ACCOUNTING IN CONSTRUCTION

Moscow DENG I KREDIT in Russian No 9, Sep 85 pp 12-20

[Article by N.V. Garetovskiy, doctor of economic sciences: "Improving the Organization of Cost Accounting Relations in Construction"]

[Abstract] During the twelfth 5-year plan, existing facilities and new construction will be planned as a single unit. This means that new capital investment will be allocated as a part of increases in production or services within a branch of industry. The increase in capacity of enterprises in construction must be calculated considering possible redesign and reequipping of facilities. The new standards for overhead expenses are intended to create favorable conditions for construction organizations, utilizing facilities with new equipment. The standard overhead expense calculations for such facilities are 10 percent higher for all construction, installation and special operations. The use of correct prices in development of plans for construction is thus made even more important than previously. The USSR State Construction Commission, Ministries and Departments will develop and approve prices to be used in the planning process for construction in 1986. Measures now being taken to improve the organization of economic relationships in construction, increasing the role of USSR State Bank and Construction Bank organizations, represent an important requirement for the growth of profitability of construction, successful fulfillment of State plans for economic and social development during the twelfth 5-year plan.

6508/12859
CSO: 1821/80

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UDC 69.003:658.012.2

DEPUTY CONSTRUCTION MINISTER ON WEST SIBERIAN CONSTRUCTION PLANS

Moscow *EKONOMIKA STROITELSTVA* in Russian No 12, Dec 85 pp 37-40

[Article by V.L. Pyatibrat, USSR Deputy Minister for Industrial Construction:
"Timely Solutions for Construction Problems in Western Siberia"]

[Excerpts] During the years of the 11th Five-Year Plan, the construction organizations of USSR Minpromstroy [Ministry of Industrial Construction] placed 1,452,000 square meters of overall housing space in operation in the region of the western Siberian complex. More than 80 percent of this housing space was for petroleum and gas workers and for geologists. This surpassed by a factor of 2.5 the volumes for the placing in operation of housing space during the 10th Five-Year Plan. In addition, 11 schools for 13,000 students, 25 pre-school institutes for 7,000 pupils and a number of other installations of a social and cultural-domestic nature were built during the 11th Five-Year Plan.

Approximately 260,000 square meters of overall living space, two schools and 10 pre-school institutes were placed in operation in Tobolsk.

Nizhnevartovsk, a city in which 200,000 individuals reside, was built within a short period of time. It ensures rich and vital activities for workers despite the stern climatic conditions found in western Siberia.

Industrial construction has changed sharply the external appearance of other cities in the oblast, it has expanded their boundaries and it has improved the availability of public services and amenities. Such populated points as Raduzhnyy, Magion and Langepas have been transformed into cities.

During the years of the 11th Five-Year Plan, a large program of industrial construction was carried out in connection with the building of the first phase of the Tobolek Petro-chemical Complex: the capabilities of a gas-fractionating unit for 3 million tons annually and the Severnaya Marketable-Raw Materials Base were introduced into operations and various engineering lines of communication of considerable length were built. The installation of large technological columns weighing approximately 1,000 tons and almost 100 meters in height was carried out for the very first time in domestic construction practice.

Despite the extremely inadequate capabilities of the construction organizations in these regions, the weak production base and the shortage of personnel, the

ministry, within a comparatively short period of time, succeeded in creating new and large construction organizations which turned out to be capable of ensuring the carrying out of a large volume of industrial and civil-housing construction. Thus the second phase of a ZhBI-3 plant for 160,000 cubic meters of precast reinforced concrete was introduced into operations at Tyumen. A plant for large panel housing construction with a capability for producing 140,000 square meters of housing space annually and a plant for the production of 120,000 cubic meters of reinforced concrete structures annually were placed in operation at Tobolsk. A production-technological completion base with berths and accumulation tanks was built at Nizhnevartovsk. By the end of the 11th Five-Year Plan, the capability of enterprises in the region for producing precast reinforced concrete had reached 660,000 cubic meters, lumber -- 120,000 cubic meters and lightweight aggregate gravel -- 240,000 cubic meters. More than 50 million rubles worth of capital investments have been allocated for the creation of a production base for the construction industry during the 11th Five-Year Plan. The great amount of attention devoted to creating the production base and mastering its capabilities made it possible during the five-year plan to increase by 16 percent the volume of completely prefabricated industrial construction and civil housing construction -- by 12 percent.

Leading methods are being employed extensively at all construction projects for the organization of work and for the production technology. Thus the construction of civic buildings and engineering lines of communication was carried out using network models for planning and administration. A unit method for planning and organizing the carrying out of construction-installation work was introduced into operations at the Tobolsk Petrochemical Complex. The brigade contract method was employed for carrying out approximately 65 percent of the overall volume of work.

The complete unit construction method has turned out to be extremely effective and promising, especially in regions of western Siberia. This fact is recognized by all organizations. However, each construction ministry is employing this method in its own particular way and is completing its structural units and items of equipment while being guided by local decisions. Why is it that specialization cannot be developed and introduced into this important work, after first distributing tasks among the ministries for the creation of definite sets of spatial units and super-units? This would bring about a considerable savings in the use of materials and human resources, a substantial reduction in the duration of construction and an increase in labor productivity.

Quite often the city construction plans for a large construction project do not take into account existing series for apartment dwellings and if they do take them into account then provision is not made for the use of structures prepared for them in different variants or for buildings of a cultural-domestic nature. Dwellings of the 111-112-5m series, planned for the North as a housing example, have now been improved to a large degree by the Nizhnevartovsk house-builders and planners, as a result of which they are now more attractive, more economical and warmer. However, the plan still does not provide for the use of unit-sections for this building, such that it would be possible, using these products, to build a dormitory facility, a building with apartments for small families, pre-school institutes and schools.

A similar situation has developed in connection with the Series 111-83 and 111-97 buildings, not to mention the fact that a need for developing technical documentation for triple-layer wall panels for these buildings was established long ago.

A need exists for eliminating the differences between the rates for industrial growth and those for the construction of housing and social and cultural-domestic installations in the oblast.

This program mainly calls for work to be completed on the formation of a construction industry base for the Tyumen builders. At Nizhnevartovsk, the plans call for the placing in operation of the second phase of a large-panel housing construction plant, which will make it possible to produce 280,000 square meters of living space annually and ensure the placing in operation of a plant for reinforced concrete structures having a capability for producing 50,000 cubic meters of product annually. At Tyumen, the plans call for the building of a plant for metal forms and rigging with a capability for producing 10,000 tons of product annually and also for the capability for producing lightweight aggregate gravel to be increased by 100,000 cubic meters annually.

Special purpose programs have called for the development and production of block and complete-unit installations of complete plant readiness, including for the creation of mobile bases of construction organizations in newly developed rayons in Tyumen Oblast.

These and other measures aimed at raising the industrialization of construction are making it possible for the construction organizations of Glavtyumenpromstroy of USSR Minpromstroy /Ministry of Industrial Construction/ to increase the volume of completely prefabricated construction by 20 percent, thus raising the proportion of civil housing construction to 92 percent of the overall volume of this type of construction.

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CONSTRUCTION PLANNING AND ECONOMICS

BRIEFS

KAZAKH CONSTRUCTION MATERIALS CONFERENCE--(KAZTAG)--The conference, which was held on 7 January in the Kazakh SSR Ministry of the Construction Materials Industry, discussed the question of the results of the labor of the workers of the construction industry last year and the tasks for this year. Minister O.M. Beysenov, the speaker, and others who spoke noted that last year the production volume in the sector increased by more than 19 million rubles. The output of cement, corrugated asbestos board, wall and rock materials, and facing items increased, the production of new materials was assimilated. But many enterprises and the ministry as a whole did not achieve the planned basic technical and economic indicators. It is necessary to tighten up the monitoring of the work of interdepartmental subdivisions and to devote particular attention to the introduction of the scientific organization of labor, advanced technologies, and modern equipment. The socialist obligations of the workers of the construction materials industry of the Kazakh SSR for the 1st year of the five-year plan were adopted. Deputy Chairman of the Kazakh SSR Council of Ministers O.I. Zheltikov and USSR Deputy Minister of the Construction Materials Industry V.Ya. Sidorov spoke at the conference. N.F. Krasnoselskiy, chief of the Construction and Municipal Services Department of the Kazakhstan CP Central Committee took part in the work of the conference. [Text] [Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 8 Jan 86 p 2] 7807

INVESTMENT, RETOOLING, PRODUCTION PLANS--This year state capital investments are increasing. They will come to 164 billion rubles--approximately 8 percent more than last year. The means to the rapid updating of the production system and at the same time to the rapid recovery of expenditures is retooling and renovation. The share of the assets being allocated for these purposes will increase from 38.5 percent in 1985 to 40 percent in 1986 and 50 percent in 1990. In construction work the task is being posed to decrease by approximately 25 percent the amounts of manual labor, to increase its productivity by 15-16 percent, and to decrease the cost of construction and installation work by 4-5 percent. [Excerpts] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 22 Jan 86 p 2] 7807

NEW FAR EASTERN CITY FOUNDED--Komsomolsk-na-Amure--Not far from Komsomolsk-na-Amure, in the village of Nizhnetambovskiy, a new Far Eastern city has been founded and the construction of a large nitrogen fertilizer plant has been started. During the 12th Five-Year Plan more than 100 million rubles have to be assimilated at the construction site of this first of the large-scale chemical industry on the banks of the Amur River. A production base of the construction workers will be created, an access road will be laid, thousands of square meters of housing and social, cultural, and personal service facilities will be built. Seven ministries are already studying the possibilities of building their own facilities here. [By L. Aleksandrov] [Excerpts] [Moscow STROITELNAYA GAZETA in Russian 24 Jan 86 p 2] 7807

BELORUSSIAN CONSTRUCTION PLAN COMPLETE--Having launched the socialist competition for preparing for the 27th CPSU Congress on an extensive scale, the labor collectives of the BSSR Ministry of Installation and Special Construction Work fulfilled their five-year task 1 month earlier than the schedule called for. Ten million rubles worth of above-plan profits were realized. Roughly 34 million rubles worth of additional construction-installation work were carried out prior to the end of the year. A conversion was carried out over to the industrial complete-unit method for installing boiler units, compressor and pumping stations and other installations of a power engineering nature. Extensive use is being made of pipelines made out of polyethylene, structures made out of steel of raised strength and effective rolled metal profiles. This has made it possible to realize a savings of more than 15,000 tons of rolled metal, to reduce labor expenditures and to raise the quality of construction. /by N. Yuryey/ [Excerpts] [Moscow STROITELNAYA GAZETA in Russian 20 Dec 85 p 1] 7026

CSO: 1821/106

INDUSTRIAL CONSTRUCTION

UDC 69.002.2:69.05(517.6)

SLOW PROGRESS MADE IN INDUSTRIALIZATION OF FAR EAST

Moscow PROMYSHLENNOYE STROITELSTVO in Russian No 11, Nov 85 pp 11-12.

[Article by Candidate of Technical Sciences O. A. Zhuchkov (Far East Polytechnical Institute) and Candidate of Economic Sciences A. G. Ros (Far East Scientific Research Institute for Construction): "Industrial-Construction Systems for Putting Up Industrial Buildings in the Far East (for discussion)"]

[Excerpt] In recent years, qualitative shifts have been planned in the area of increasing the industrialization of construction production. Modern equipment and motor transport are reaching the construction sites on an ever-growing scale. The capacity of construction industry enterprises is being increased. However, experience shows that the necessary return on the accumulated potential is not being achieved. This can be illustrated in the example of the Ministry of Construction's Glavvladivostokstroy in the Far East and Transbaykal regions.

	1980	1981	1982	1983	1984
construction-installation work not subcontracted, percent	100	103.8	102.7	107.5	111.8
number of workers performing construction-installation work, percent	100	103.5	104.3	105.6	107.5
availability of construction machinery, percent	100	109.1	127.9	127	129.4
prefabricated reinforced concrete production, percent	100	104.7	106.4	111.3	119
labor productivity in construction-installation work, percent	100	100.8	98.6	101.7	100.8

It is evident from the data presented that increasing the availability of machinery and the degree of prefabrication, provided by increasing the production of prefabricated reinforced concrete, has not had an appreciable impact on labor productivity. The increase in the amounts of construction-installation work done was achieved basically by increasing the number of participants in the production process. This situation is characteristic of a majority of the construction organizations of the Far East and can be viewed as being especially negative in light of the significant labor resources shortage.

An analysis made in the USSR Gosstroy's Dalniis [probably: Far East Scientific Research Institute for Construction] showed that one of the main reasons for the

inadequate growth in the amounts of construction-installation work and the insignificant effectiveness of construction has been the low level of construction production organization and management. In this connection, it seems appropriate, for the purposes of discussion, to adduce a number of considerations aimed at correcting the situation which has evolved, with consideration of the specific features of the Far East.

The Far Eastern economic region is among the least-developed regions of the country. National-economic specialization here is aimed at increasing production volume, basically in the extractive branches of industry: nonferrous, petroleum and gas, fishing, coal, lumbering and wood processing. And the new mineral deposits which must be drawn into economic circulation in the very near future are generally situated in relatively hard to reach and underdeveloped areas.

Underdevelopment of the region results in a low level of construction production concentration. Currently, the construction of large industrial projects is accompanied by major difficulties in creating construction collectives, even in centers of concentrated construction.

Poor transport development is characteristic of the Far East, with freight being shipped great distances, often by complex transport routes including seasonal shipments by river and sea.

The specifics of the natural-climatic conditions of the region are that a majority of the factors known to complicate construction production are present: extremely low outside air temperatures reaching -50 to -55°C in some regions, considerable permafrost and seismicity, high air humidity and driving rain in coastal regions, and mountainous terrain. The features noted have a significant influence on the organization and management of construction production.

As throughout the country, further increasing capital construction and improving its effectiveness on a basis of labor productivity growth in the Far East are proceeding along the path of industrialization. In this regard, primary attention must be paid to changing construction work over to factory conditions. It is considerably easier to resolve questions of mechanizing and automating the manufacture of construction components in the factories, where unfavorable environmental influences are absent, which is especially important. Such an approach best meets the demands of the policy of saving labor.

At the same time, there are quite a few types of work in industrial construction which cannot be shifted to factory conditions. But they can also be done using highly productive industrial methods thanks to the use of mechanization equipment and tools, with flow-line labor organization and the synchronous provision of the needed material-technical resources.

Construction production industrialization requires the development of management forms and organization methods which create opportunities for continuous, flow-line performance of all types of work. The special-topic "USSR Construction Complex" commission of the Scientific Council on Problems of Scientific-Technical and Socioeconomic Forecasting Problems attached to the USSR Academy of

Sciences presidium and the State Committee for Science and Technology have put forward the idea of developing and widely introducing industrial-systems methods of construction. The essence of the idea is an organic interlinking of the types of buildings and structures, their structural resolutions, the material resources structure, means of mechanization and transport, and also the organizational forms and economic methods of management.

The introduction of industrial-systems methods predetermined the organization of long-term construction flows provided with the necessary equipment and motor transport. In this instance, a significant increase in labor productivity can be obtained. It would be provided foremost because labor habits would be improved when operations are repeated many times, which reduces the time taken to perform jobs. This same circumstance would ensure high quality and the more economical expenditure of materials and energy resources. The allotment of construction machinery and motor transport to flows will facilitate their more efficient use, which will also ensure labor productivity growth.

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CS0: 1821/95

INDUSTRIAL CONSTRUCTION

GOOD PLANNING OF CONSTRUCTION WORK AT BALAKOVSKAYA AES NOTED

Moscow ENERGETICHESKOYE STROITELSTVO in Russian No 2, Feb 86 pp 38-39

[Article by Engineer V. V. Prokopenko: "Raising the Quality of Construction of Sites at Balakovskaya AES"]

[Summary] Several factors enter into the attainment of a high quality of work at the Balakovskaya AES [Nuclear Power Station]. Good preparatory engineering work is essential. This includes assignment of work by volume, work force calculations, designing a schedule for the assembly works and for receipt of construction materials and equipment. Special attention was devoted to railway approaches and communications, which were 90 percent complete by the beginning of the basic construction period.

In taking on this project, the SARATOVGESSTROY [Saratov Hydroelectric Construction Trust] reduced the number of its obligations at other construction sites and renovated its industrial base. This included renovation of its concrete and wood-processing plants. To reduce consumption of cement, the concrete-mixing shop was renovated. At the ferroconcrete products plants several new technologies were introduced, such as preparing concretes and solutions utilizing a complex activation of water in a magnetic medium, and factor surface finishing of containment parts for the reactor section. Large-scale site assembly has been facilitated and improved by use of the unique K2 x 100 gantry crane and SKR-2200 towers with a lifting capacity of 75 tons. At the second power unit, the use of automatic and semiautomatic welding in building the reactor has significantly reduced assembly time and improved quality. The use of a new technology for transport and application of concrete and use of concrete pumps have reduced labor losses by 15-20 percent.

A differential system of wage payments with rewards depending upon quality of output and a three-point wage scale system have been introduced at the construction plants. Work environment and recreation improvement projects have also helped to reduce labor force turnover, which has been held to 12 percent since 1982.

Problems nonetheless remain which necessitate revisions in budgetary and design calculations. The quality of certain construction materials supplied to the site, such as rolled metal stock, glass plates, steel fixtures, and other materials, has not been sufficient. The supply of materials such as anodic panels, fiberglass-reinforced plastic, aluminum sheet and rolled parts has also not been satisfactory. Flat ferroconcrete plates of the PYa grade and ribbed plates of the PR grade for closure are being used in reactor construction. However, the metallic molds needed for preparation of these plates are not being replaced in a timely fashion. Replacement and preparation of these plates should be centralized in one factory.

CSO: 1821/134

INDUSTRIAL CONSTRUCTION

NEW BOOK REVIEWS CONSTRUCTION ACCIDENTS, DEFECTS

Moscow ZHILISHCHNOYE STROITELSTVO in Russian No 9, Sep 85 pp 30-31

[Review by N. M. Azarkin (Moscow) under the rubric "Criticism and Bibliography" of book "Preduprezhdeniye avari pri stroitelstve zdaniy" [Preventing Accidents in Building Construction] by R. I. Veyts, Leningrad, Stroyizdat, 1984, 144 pages, illustrated]

[Text] A variety of housing, civil and industrial structures are erected in the USSR, but unfortunately, defects and accidents are still encountered in construction.

In this connection, publication of the book by R. I. Veyts is topical in its examination of accidents, collapses and defects in the construction of buildings over basically the past 15-20 years; it briefly illuminates such questions as reliability, durability and fire-resistance in standard design and analyzes the causes of accidents and major defects for which designers are to blame due to mistakes in calculations when designing pivotal structures and foundations, as well as due to failure to include instructions on steps to provide stability and dimensional rigidity.

The early part of the book reveals the structural features of standard housing, civil and industrial buildings with consideration of such categories as reliability, durability and fire-resistance. It notes that, when discussing the reliability of buildings and structures, one needs to take into account the influence of loads due to snow, wind and temperature.

Subsequent chapters describe accidents and major defects in the construction of large-panel housing, frame and frame-panel buildings. Analysis of accidents involving these components permits ascertaining typical causes, including defects and poor-quality construction-installation work, deviations from plans when erecting buildings and structures and their elements, violations of the elementary rules for installing and conditions ensuring the rigidity and stability of components during design and construction, the use of insufficiently strong materials and components, replacement of component or component element materials without the permission of planning organizations, shortcomings in planning resolutions in combination with work defects, overloading load-bearing components when operating structures, and the absence of reliable anti-corrosion protection equipment and methods. The book also notes that one reason for

collapses is inadequate study of the performance of certain components under load and defective or substandard engineering-geological and hydrogeological studies of foundations.

Moreover, the book adduces the main causes of accidents and collapse in the construction of brick buildings. These include poor quality bricklaying, the use of low-strength brick, structural discrepancies connected with the use of materials of dissimilar strength and rigidity (as, for example, ceramic and lime-and-sand brick), erecting buildings on slumping soils without preliminary consolidation, and violations of work rules for winter conditions.

The author's recommendations on preventing defects arising when installing and improperly operating foundations will be useful.

The book pays particular attention to steps to prevent defects when building in seismic regions. The author describes the behavior of various construction components under these conditions. However, we think one needs to be very cautious in recommending the extensive introduction of large-panel buildings in construction in seismic regions. In fact, the data on the behavior of large-panel buildings during earthquakes are only beginning to be gathered. It is more important to emphasize the importance of builders' carrying out the measures anticipated in the plan with consideration of the features of construction in seismic areas. The fact is that construction is still often not being done at a high level, and sometimes anti-seismic measures are not carried out at all, for simplicity's sake.

The concluding chapters examine measures to prevent defects in prefabricated items, as well as characteristic features of collapse in metal components.

On the whole, R. I. Veyts's book permits thorough study of the causes of construction accidents, providing an opportunity to understand the natural laws at work in components, buildings and structures, drawing the attention of scientists, planners and builders to shortcomings in planning and installation work, raising the level of builder labor protection and safety and, in so doing, improving construction standards, quality and reliability.

This book by R. I. Veyts will be interesting and useful to all construction workers.

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CSO: 1821/95

BRIEFS

VLADIVOSTOK RIVER-SEA PORT—Construction of a new berth complex at the Vladivostok sea and river port, one of the most important projects in the current five-year plan in the Far East, is complete. Previously, there was only a small coal center huddled on vacant land on this bare, rocky "snout" at the entrance to Zolotoy Rog. Now, a new berth complex has been installed on the snout. It will be not only the largest, in terms of throughput, but also the most compact in the port. And it is designed for operation using progressive "board - car" technology. [Excerpts] [Moscow TRUD in Russian 24 Nov 85 p 1] 11052

ARMENIAN RADIO-TELESCOPE—Construction of a new radio-telescope with a 50-meter hemispherical primary mirror is nearing completion on the slopes of Aragats Mountain in Armenia. It is being created at the standard test ground of the All-Union Scientific Research Institute of Radiophysical Measurement. Unique in this country in its size and power, these "radio-binoculars" will enable scientists to better study distant astronomical objects. [Text] [Moscow STROI-TEL'NAYA GAZETA in Russian 10 Nov 85 p 3] 11052

HOUSING CONSTRUCTION

GOSSTROY OFFICIAL ON NEW TYPE DESIGN FOR RURAL HOUSING

Moscow NA STROYKAKH ROSSII in Russian No 1, Jan 86 pp 17-21

[Article by N. Sogomonyan, department chief, TsNIIEPgrazhdanselstroya (Central Scientific Research Institute of Experimental Planning for Rural and Civil Construction), State Committee for Civil Construction of USSR Gosstroy, candidate of architecture: "Basic Series of Standard Rural Housing Designs for Villages in the Non-Black Earth Zone"]

[Text] The tasks of rebuilding rural populated areas and creating a complete residential environment presume thorough development of residential housing construction which most fully corresponds to the conditions of the rural way of life, including the conduct of private subsidiary farming. To accomplish these tasks, which are also aimed at reducing the cost of construction, the TsNIIEPgrazhdanselstroy Institute is developing a regional basic series of standard designs for rural residences for the RSFSR non-black earth zone (illustrations 1, 2, 3 and 4).

In creating an economical and comfortable rural residence the main questions for state construction are: accounting for the special features of rural living and construction conditions; raising the efficiency of standard designs; and improving volumetric planning and design decisions with the use of local construction materials and slab designs, as well as factory manufactured prefabricated products.

Development of the basic series is based on a single architectural solution for houses of different designs and differing levels of utilities, which makes it possible to remodel a building without general structural redesigns, in the process of operation, from the simplest to centralized systems. The designs envision: interchangeability of designs in construction; the use of the same solution with different levels of utilities, in specific situations; optimizing the range of standardized construction designs for the industrial base of different departments; and reducing the number of standard designs.

Selecting the minimum number of necessary types of residential housing, and consequently of standard designs, is one of the most important factors in the effective use of capital investments. The expenditure of material, monetary and labor resources; the residential structure space requirement; the amount of private sector agricultural production; and the capability for attracting

funds of the population largely depend on the correct selection of the number of stories and types of residential housing. Preference given to one or another type of residential housing -- rural or sectional -- is important for organizing the domestic life of the rural families. Whereas, for city life the needs of the city design and building economy are of decisive importance, under conditions of the rural way of life the main factors are of a social and economic sort; such things as the creation of a comfortable living environment, convenient subsidiary farming, and the population's link to the rural economy.

The choice of types of housing is especially important for collectivized types of rural residential construction, since for individuals who build, the single family rural house with a nearby plot of land and farm structures remains the main type. In determining the types of residences for state construction, particular regional features of the non-black earth zone of the RSFSR stipulated selecting a series core consisting of one and two story rural housing designs with from two to four rooms.

Types of Basic Series Farm Housing for State Rural Construction

Name of Index	Number of Housing Types (Designs)					
	1	2	3	4	5	6
Stories	1	1	1	1	2	1
Number of Apartments	1	2	2	2	2	4
Number of Rooms	3	2-2	3-3	4-4	4-4	2-3-3?

Most widespread in non-black earth villages are two and three room apartments. Along with this, basic types of housing -- two apartment and multi-apartment -- have been built in rural areas through state capital investments. Therefore, in six designs of the basic series core, 4 two apartment houses and 1 four apartment prefabricated house has been approved. As for the single apartment, three room house, it is included among the primary standard house designs as providing variety in residential structures, and also as recommended for individual and cooperative construction (see table).

Another factor which determines the cost of a house is the number and size of the rooms. As is known, the supplements and changes to SNiP [construction norms and regulations] II-L.1-71, approved by USSR Gosstroy on 13 January 1983, provide norms for the upper limits on overall apartment size for rural state construction. For the purpose of creating economical housing for collective types of residential construction, the upper limits of overall size have been somewhat reduced in the basic series designs which are being developed, by reducing the area of auxiliary rooms. Thus, such authorized rooms as laundry rooms and rooms for household work are not included.



Рис. 1. Проект одноэтажного одноквартирного трехкомнатного дома: слева — фасад; справа — план;
1 — общая комната 18 м²; 2 — спальни 11.9 и 10.3 м²; 3 — кухня 9.8 м²; 4 — передняя 6.6 м².

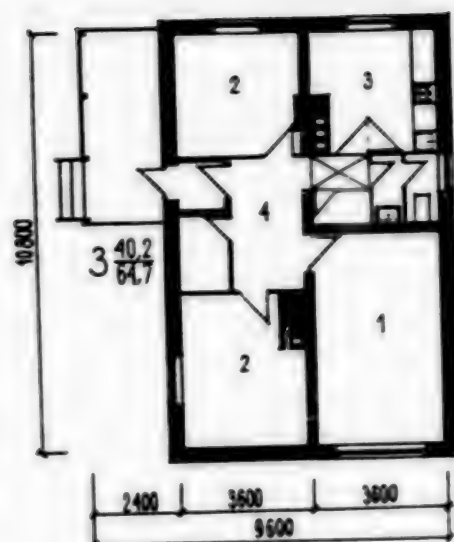


Figure 1. Single story, one apartment, three room house plan:
left -- facade; right -- plan.
1 -- common room (18 square meters); 2 -- bedrooms (11.9 and 10.3 square meters); 3 -- kitchen (9.8 square meters); 4 -- entrance hall (6.6 square meters).

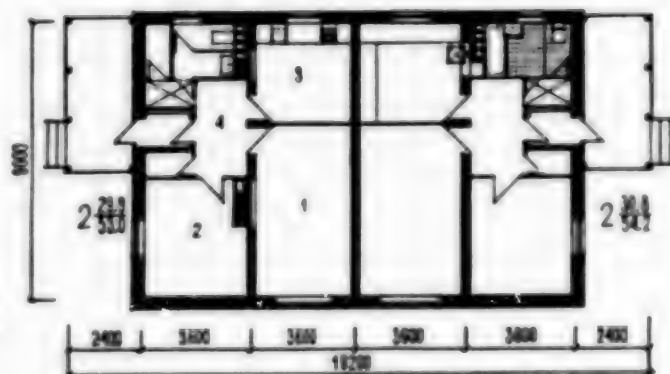


Figure 2. Single story, two apartment house plan with two room apartments:
above -- facade; below -- plan.
1 -- common room (18.3 square meters); 2 -- bedroom (11.6 square meters); 3 -- kitchen (10.6 square meters); 4 -- entrance hall (5.5 square meters).

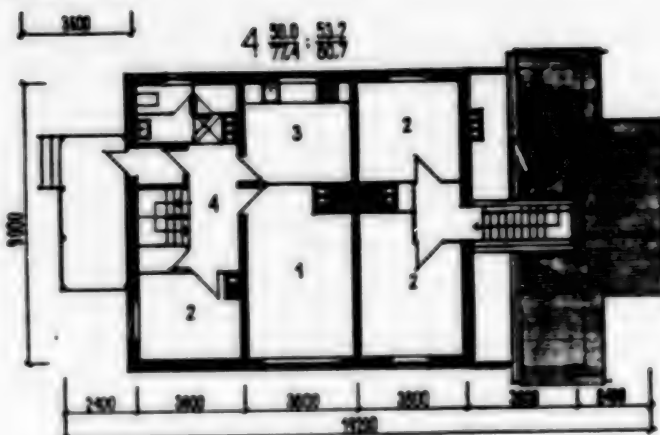
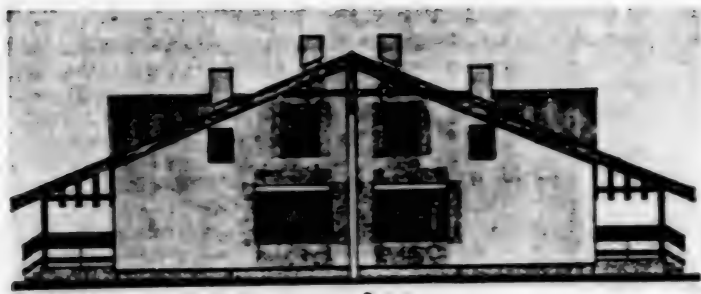


Figure 3. Two apartment, attic type house plan, with four room apartments: top -- facade; bottom -- plan.
1 -- common room (17.1 square meters); 2 -- bedrooms (8.7, 13.7 and 10.5 square meters); 3 -- kitchen (10.5 square meters); 4 -- entrance hall (6.5 square meters).

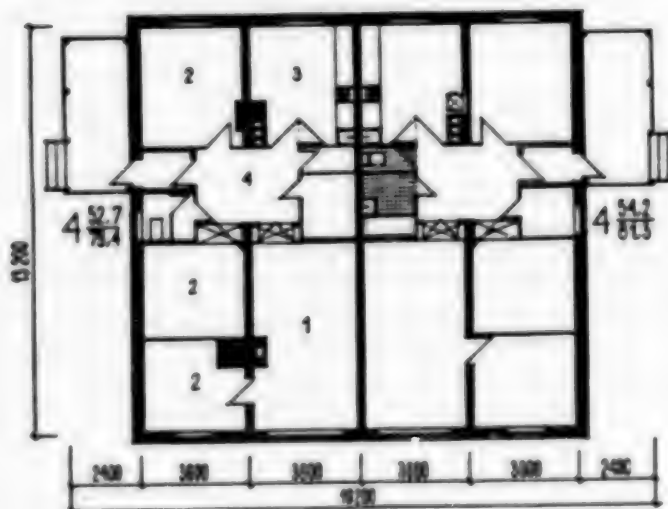


Figure 4. Single story, two apartment house plan, with four room apartments: top -- facade; bottom -- plan.
1 -- common room (20.4 square meters); 2 -- bedrooms (8.8, 10.8 and 12.7 square meters); 3 -- kitchen (12.1 square meters); 4 -- entrance hall 7 and 6 square meters.

Excluding these rooms made it possible to reduce the number of doors, dividing walls and plumbing fixtures. At the same time, along with reducing the overall area, the basic series designs take into account the possibility of planning apartments with more kitchen space (no less than 9.0 square meters).

Reserves for reducing housing costs are also found in the residence volumetric planning decision. The requirements on which the development of series designs are based take into account rural living conditions and conveniences. These include: zoning of the accommodations; convenient relationship to the apartment private plot; compact spaces; a limited number of entrances into the apartment to reduce heat loss; selection of the composition of the accommodations, including summer accommodations, taking into account specifics of the rural way of life; and the capability to change the size of the house as the family grows and develops. The architectural decision for the house, worked out in accordance with the established requirements, envisions standardization of planned elements -- entrances; the kitchen-plumbing unit; living rooms -- as well as of separate elements -- gables, verandas, etc.

The selection of planning techniques was accompanied by a search for suitable design directions, taking into account standardization of structures. The houses have been designed with walls of different materials: brick; small and large reinforced concrete block; panels; claydite-concrete; arbolite and wood. In order to accomplish intra-series and inter-series standardization, spans of uniform size are adopted in virtually all elements of the building, from the foundations to the roof. Ensuring that the dimensions and size of industrial structures permit them to be transported and assembled by small and medium capacity mechanisms was taken into account. This is very important under conditions of the relatively small volume of rural construction, with substantial dispersion of construction industry bases.

The need to limit the number of spans, and to take into account the special features of the fully assembled, wooden residential structure and the building of residential housing out of local materials predetermined the choice of narrow spaced 3.6 meter, and in the future 7.2 meter sections, over the preferred large 12 meter module. These spans were selected taking into account their use in housing design and construction practice, and also as optimal parameters for re-roofing structures through the use of whole sections of wood or, in the future, by lumber firms for factory built wooden houses.

The choice of parameters was also determined by a qualitatively new design method which has been adopted -- the method of modular linear integration, which is based on building up combinations of standardized basic elements. This is essentially adding one or several particular modules in parallel to the load bearing walls and forming each subsequent type of house (apartment) by attaching the chosen module.

The combination of two spans makes it possible to implement the principle of sequentially building up standardized enlarged modules, since when necessary, planned elements (including standardized roofs) with 7.2 meter dimensions are formed by adding 3.6 meter spans. A value of such designs is their broad versatility given limited initial data. The method of modular linear integration provides for a limited group of initial standardized elements;

simplicity of the technological process; economic effectiveness and extremely rapid introduction.

By a basic decision, residential housing was approved without basement accommodations, since construction of the latter increases the material intensiveness of the foundations and the labor intensiveness of construction, which results in higher building cost. In houses without basements it is recommended that cellars be placed under the agricultural barn for fuel and equipment or provided as a separate standing structure. In all the houses the roofs are rafter type; their elements are standardized and the width of the transverse ridges is 14.4 and 7.2 meters.

The plan chosen is largely determined by the need for stages of utilities equipment according to three levels of construction. The first (simplified system) includes heating and heating-cooking stoves and a toilet with septic tank. The second (autonomous systems) includes heating from KChM-2M small capacity, solid fuel boilers with water-to-water heaters for making hot water; cold water supply from a well with a Gnom pump; a sewage system consisting of a septic tank with a sand-gravel filter for each apartment; and gas supplied from gas containers. The third (centralized system) consists of utilities equipment from external systems.

The advisability of building the septic tank at the side of the lot predetermined toilet placement near the entrance to the house. In four room apartments with accommodations on two levels, and in two room apartments the public bathroom and laundry and the kitchen are combined into a single unit and oriented to the side of the apartment lot. In three and four room apartments on one level the toilet is located near the entrance and the public bathroom and laundry are in the interior of the apartment. The common room is turned to the street and the bedrooms to the extent possible are turned to the rest area of the apartment lot.

An innovation in the architectural design decision is associated not only with improving the planned use of structural space, but also with the possibility of changing the overall area of the house as the family grows. In the basic series a variant of staged erection of buildings is envisioned involving building additional accommodations through rebuilding the attic. Thereby, a progressive tradition is implemented by which rural residents adapt their residence to the changing needs of the family.

The idea of the "growing" house is especially important for the village, since the amount of the residential fund there is small and opportunities for its redistribution are limited. The conduct of private subsidiary farming on one's lot also makes it difficult to exchange apartments. Therefore, the spatial development of the house is essentially the main means by which the rural resident adapts to changes in his family.

In the basic series, one and two apartment houses with two and three room apartments take into account in advance the possibility of subsequent development and expansion. The spatial transformation of the apartment is provided for through reserve accommodations in the attic, which makes it possible to build houses of two types, based on a standardized system of

factory built products: with attics and single floor, planned for subsequent transformation. Overall, expansion of the rural residential house, along with other decisions, is aimed at economic efficiency of residential construction.

The creation of a "growing" house; the compactness of the planned use of space; the building of a single entrance to the house (apartment), along with other enumerated characteristics of basic series designs, corresponds to the system of modern normative and directive requirements regarding expenditure of materials, labor and fuel, as well as reduction of construction costs. By comparison with existing series, the basic series designs reduce the cost of rural houses by approximately 5-10 percent per square meter of overall space, through:

optimizing types of housing and the composition and area of accommodations;

standardizing planned use of residential housing space in different design systems;

using efficient construction materials; advanced technical solutions for products, assemblies and parts; and effective building assembly.

Increasing the economy of standardized designs and reducing the cost of building residential housing is being achieved, taking into account the special features of the rural way of life and the specifics of building in the village. Creation of the first basic series with a narrow 3.6 meter span is oriented toward its mass use under non-black earth conditions, using both contract and farm methods of construction, as well as the efforts of individual builders.

Development of the basic series for the RSFSR non-black earth area is the first stage in an extensive program to develop a single method for creating regional, economical standard residential housing designs, which take into account the existing normative-methodological planning base, selected parameters for planned use of space, and design trends which provide for the standardization of construction decisions and the effective use of the main capacities of the construction industry base.

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9069

CSO: 1821/125

CONSTRUCTION METHODS AND MATERIALS

BETTER USE OF BY-PRODUCTS IN CONSTRUCTION MATERIALS NEEDED

IZVESTIYA On Delays

[Editorial Report] Bureaucratic foot-dragging in the drive to use the 100 million tons of cinder produced as a by-product of thermal electric-power stations is criticized in a 1700-word article entitled "When will Cinder Stop Being a Cinderella - On the Formal Replies of Responsible Bodies and the Real Facts of the Situation" by special correspondent V. Shchepotkin in Moscow IZVESTIYA in Russian 5 January 1986 page 2. A harder, more economical cement can be obtained by using coal cinder as an additive, according to Professor A. Volzhenskiy of the Moscow Construction Engineering Institute imeni Kuybyshev. In addition, the author continues, if used in significant quantities, cinder can be used to substitute for sand and other additives in the production of brick, concrete and gravel.

Not organizational or technical difficulties, but "bureaucratic attempts to brush off this matter" are responsible for the inadequate use of cinder according to the author. Officials of the State Committee for Construction have blamed the Ministry of Power and Electrification for not fulfilling its commitment to assemble dry-cinder selection devices. Thus the USSR Ministry for Heavy Industry Construction last year received only 200,000 tons of cinder, while 350,000 tons had been promised. The USSR Ministries of Construction and of Water Transport were similarly unable to fulfill their responsibilities to use cinder. Blame is also assigned to USSR Deputy Minister of the Construction Materials Industry I. Assovskiy for stating that ministry plants should be praised for their "determined and massive" use of cinder while, according to the author, an audit has determined that use of cinder was systematically curtailed by this ministry during the first three years of the last five-year plan.

In a postscript to the article, the editors urge the responsible leaders to take measures needed to resolve this problem, so that "this large potential economy in construction materials can at last be utilized without delay".

All-Union Conference on By-Products

[Editorial Report] An All-Union Conference held in Moscow on the technology and utilization of waste by-products in the construction materials industry has issued a report which criticizes the insufficient volumes of waste products which are currently being processed into construction materials, as reported in Moscow STROITEL'NYE MATERIALY No 1, January 1986 pages 26-27. The conference reported that, although the technological potential exists, it is not being used due to the "absence of a precise economic evaluation of the comparative effectiveness" of using industrial waste by-products as opposed to traditional raw materials.

Nonetheless, the conferees report that factors preventing the massive use of waste products include instability of its characteristics, a high unburnt-fuel content, certain "scientific-technical processing imperfections," transport difficulties and an insufficient economic interest of enterprises and official institutions in using these by-products. The conferees noted that a "significant volume" of scientific-technical exploitation of waste products has been accumulated and there are positive examples of utilization. Yet the general volume of usage is only 5-6 percent of output. The conferees requested that the USSR State Committee for Science and Technology and Gosplan examine the possibility of expediting the finished technological processing for the use of industrial waste products; that Gosplan and Gossnab allow territorial managements to conduct land-surveys of existing industrial wastes and oblige official institutions to consider the results of these surveys when formulating new construction and repair projects; and that Gosstroy authorize the Institute of Economics to work out normative materials and measures to stimulate the use of secondary products.

Several presentations at the conference concerned the technology of secondary product utilization in the construction materials industry. Examples of current research in the field include production of the following materials from the industrial slag of coal processing and thermal electric power plants: cement, agglomerate gravel, ceramic wall materials, silicone concrete and brick, cellular cement, artificial porous additives, a firmer expanded clay, thermal-insulating mineral wool, and asbestos silicone. Research and production of materials from slag is being conducted at such institutions as the VNIISTrom (All-Union Scientific Research Institute of Construction Materials and Structures), Yuzhgiprostrom (State Design Institute for Construction Materials in Southern Regions), and research institutes in the cities of Kiev, Bryansk, and Vilnius.

It was noted that the construction materials industry is one of the Soviet economy's biggest consumers of fuels and raw materials. On a yearly basis, it processes 2 billion cubic meters of mineral raw materials, uses over 70 million tons of standard fuel, 50 billion kilowatt hours of electricity and accounts for 30 percent of the national economy's transport load.

Transportation, Processing Problems

[Editorial Report] Transport delivery and cinder processing problems are also discussed in an article by two industry specialists on this subject in Moscow STROITELNAYA GAZETA in Russian 8 January 1986 page 2. The cinder must be used in dry form, but it is currently being delivered wet to users because, according to the authors, it is hydraulically processed at the disposal sites. This method is criticised as costly for transport purposes, impractical, since the properties of the cinder are chemically altered in wet form, and damaging to the environment. Therefore only about 12 percent of the cinder available for use in the country was actually utilized in 1984, the authors state. To rectify this situation, the authors support dry processing of cinder, as called for in the draft of the Basic Directions of Economic and Social Development in the USSR.

Insufficient Copies of Book

[Editorial Report] A book on the use of cinder and slag in construction materials' production is reviewed in Moscow BETON I ZHELEZOBETON in Russian No 12, December 1985 page 27. The book, published in 1984, is intended for scientific workers and technical engineers and has a circulation of 1300 copies, which the reviewer criticises as wholly insufficient to meet demand. He states that the book has already become a "bibliographic rarity." The title is PRIMENENIYE ZOL I TOPLIVNYKH SHLAKOV V PROIZVODSTVE STROITELNYKH MATERIALOV by A. V. Volzhenskiy et al. It was published by Stroyizdat.

CSO: 1821/109

CEMENT PLANT DIRECTOR COMPLAINS OF LOW INVESTMENT LEVEL

Moscow STROITEL'NAYA GAZETA in Russian 11 Dec 85 p 2

[Article by A. Ashikhmin, director of the Angarsk Cement and Mining Combine, Irkutsk Oblast: "Don't Stop Halfway"]

[Excerpts] When modernizing equipment and improving technological processes we increased the design capacity from 900 to 1200 tons of cement per year during the time that the enterprise was in existence. We achieved a high level of productivity from the operations of all units without losses due to unplanned downtime and start-ups. And this means that when making calculations of the cost per ton of cement that is turned out all operational expenses were reduced: for spare parts, electric and heat energy and wages.

Yet, all the same, the problem with raw materials has worsened recently. The fact of the matter is that the resources of the first phase of the "Pereval" open pit, which is a part of the cement and mining combine, have basically already been exhausted. It is becoming necessary to use more substandard raw materials. And the financing for the work to put the second phase of the open pit into use is not being completed in sufficient amounts. And where the original plan specified a start up in 1985 it is now being carried over to 1987.

And there is one more thing I would like to say. At the ministry I had occasion to see a list of enterprises that are intended to be converted to the "dry" method of producing cement during the course of the 12th and 13th Five-Year Plans. Our combine did not appear on this list. Consequently, we continue to maintain that which we have on a high operational level. But we require financial "injections" for this. And the ministry refuses to do this for us.

How can we improve the economic indicators? Should we really stop at what we have achieved?

9495
CSO: 1821/111

CONSTRUCTION METHODS & MATERIALS

PRODUCTION OF CONCRETE PRODUCTS FOR HOUSING CONSTRUCTION LAGS

Moscow EKONOMICHESKAYA GAZETA in Russian No 50, Dec 85 p 12

[Article by Yu. Mikhaylov: "Lighter Means More Economical: What Is Holding Up the Production of Lightweight Concretes"]

[Text] Already at the first stage of industrialization of construction, starting in the mid-50's, the so-called lightweight concretes found widespread application in large panel and large block house building. They differ from standard concretes in that porous fillers—keramzit, perlite, schungizite, etc.—are used in their production instead of rubble or gravel. The application of these fillers increases the heat insulation properties of the walls of residential houses and buildings of various application, and makes it possible to reduce their thickness, and consequently also their weight.

Reducing the weight of building structures has not only a technical, but also a great economic significance, especially at the current stage. We must remember that over 70 million tons of specified fuel is expended annually for the production of construction materials and products. Even more—400 million tons—goes for heating buildings.

It has been computed that a reduction in the volume weight of wall panels to one ton per cubic meter would make it possible, with all other conditions being equal, to increase the heat protective properties of the walls by 20 percent and to reduce the operational expenditures of fuel by 5 tons as computed per 1,000 square meters of such walls. With the existing scope of house building, a savings measured in hundreds of thousands of tons of fuel may be realized throughout the country as a whole.

How is this huge reserve for reducing one-time and current material and energy expenditures for the creation and operation of buildings and structures being used?

The portion of lightweight concrete presently accounts for 45 percent of all the area of outside walls in buildings constructed every year. This amount, as we can see, is not small. However, a technical-economic analysis shows that there are huge reserves hidden even here. Unfortunately, we have allowed a lag in the production of lightweight concretes and in the development of technology.

This is evidenced by the fact that in the last 30 years the volume weight of lightweight concretes has practically not decreased, although there has been every prerequisite for this. Last year it comprised over 1,200 kilograms per cubic meter. The resistance to heat transfer of such concrete in most cases is lower than the standard and economically expedient value regulated by SNiP II-3-79 [Construction Norms and Regulations] "Building Heat Technology".

The question, as they say, rests on the quality of porous fillers, or more precisely, their volume weight. A dilemma has arisen: either to irrationally increase the wall thickness and thus bear large additional one-time expenditures of labor, material and fuel-energy resources, or do go for deliberate and significant overexpenditure of fuel for heating the buildings during the entire course of their application.

It is quite evident that neither course is acceptable under current conditions. There can be only one direction—a sharp increase in the quality of the porous fillers and a reduction in their weight.

How do matters stand with this? What difficulties must be overcome first of all?

Let us start with keramzit.

At the present time, over 30 million cubic meters of keramzit gravel are produced. This comprises 70 percent of the overall output of porous fillers. This material is obtained by quick roasting of low melting point clays until they swell.

We must remember that keramzit was invented in our country 30 years ago. We have practically unlimited capacities for the selection of raw materials for the production of this material. However, we are satisfied with little. The average pour density of domestic keramzit exceeds 510 kilograms per cubic meter, while foreign companies in these same 30 years have learned to reliably obtain keramzit of the required density on the basis of various types of raw materials, including those with a density of up to 300 kilograms per cubic meter. At the same time, the specific fuel expenditure is only two-thirds of ours.

The responsibility for allowing this lag rests primarily with the USSR Ministry of the Construction Materials Industry and its institute—NIIkeramzit [Scientific-Research Institute on Keramzit].

It is true that we already have the technology for production of lightweight keramzit with density of up to 400 kilograms per cubic meter. However, the output of this material is extremely insignificant—10.2 percent of the overall volume.

The resolution of the CPSU Central Committee and the USSR Council of Ministers entitled "On Further Developing the Industrialization and Increasing the Productivity of Labor in Capital Construction" provides for a significant increase in the output of lightweight keramzits. This places special responsibility

on sectorial science and the USSR Ministry of the Construction Materials Industry. Nevertheless, the ministry has still not determined the most effective technology for manufacturing keramzit and has not developed a plant technology for the production of puffed keramzit sand.

Azerit deserves much attention. In recent years, according to the development of the NIISMI [Scientific-Research Institute on Construction Materials and Products] imeni Dadayev under the USSR Ministry of the Construction Materials Industry, the creation of installations has begun for obtaining this material. Azerit, which requires an increased fuel expenditure during production as compared with keramzit, has a number of important advantages over the latter.

The country's first installation for the manufacture of azerit, developed by Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises] in Surgut, has yielded encouraging results. When the structural shortcomings which have been uncovered are eliminated and the utilization of heat given off by the roasting aggregates (convertors and furnaces) is increased, the new material may surpass keramzit when used in enclosure structures, and will make it possible to obtain lightweight concretes.

A material such as perlite also holds great possibilities which have as yet been insufficiently utilized. As yet there are still a number of unsolved problems in the technology of puffed perlite and lightweight concretes made with it. The high specific surface area of puffed perlite sand predetermines an increased expenditure of cement for obtaining structural thermoinsulating concretes with the required strength characteristics, which for the present time neutralizes all the advantages of the especially lightweight filler.

The Scientific-Research Institute on Construction Materials and Products (Kiev) and the Scientific-Research Institute on Stone and Silicates (Yerevan), which have been engaged for many years in problems of obtaining and utilizing puffed perlite in construction, cannot determine ways of increasing the effectiveness of this filler in the production of lightweight concretes. Builders have long been awaiting practical recommendations on this matter.

For low story construction, particularly in forest regions, experience has shown that it is expedient to use arbolit—one of the varieties of lightweight concrete with filler consisting of pulverized wood. There are plans to increase the production of this material by 2.5-2.7 times in the 12th Five-Year Plan. Walls made of arbolit panels and blocks with volume weight of only 700-800 kilograms per cubic meter have good heat protective characteristics and are quite economical.

Recently there have been positive breakthroughs in the production of cellular concretes. Their volume weight has been reduced to 700-800 kilograms per cubic meter, and the physical-mechanical and operational characteristics of this material have increased. Modern equipment is being more widely introduced at the enterprises, and the volume of application of active mineral additives to save on cement is increasing.

First of all it is necessary to achieve an increase in the stability of technology which may guarantee the given properties of the finished product. We must also seek out means of reducing the labor consumption in production and installation of walls made of cellular concrete, as well as means of increasing the frost- and crack resistance of large-size structures with low volume weight. The solution of these problems must concern the scientists at the NIPisilikatobetona [Scientific-Research and Design Institute on Silicate Concrete] of the USSR Ministry of Materials, the NIIZhB [Scientific-Research Institute on Reinforced Concrete] of the USSR Gosstroy [State Committee for Construction Affairs] and other scientific-research organizations which bear responsibility for the production and application of cellular concrete in construction.

Computations performed by the Scientific-Research Institute on Construction Economics under the USSR Gosstroy showed that with the rational application of lightweight and cellular concretes in enclosure structures, an economic effect of from 2 to 10 rubles per cubic meter is achieved, depending on the type of structure, the conditions of production and supply of the fillers, their quality, and other factors. Moreover, each cubic meter of lightweight concrete reduces the weight by an average of 0.8 ton, and under conditions of building in seismic regions it permits a savings of up to 15 kilograms of reinforcement steel on every cubic meter. However, this huge effect may be realized only with adherence to high technological discipline.

At many enterprises of the Ministry of the Construction Materials Industry, keramzit is not sifted into fractions even in the presence of properly operating installations. The application of nonfractionated keramzit leads to a significant overexpenditure of cement and to an increase in the volume weight of the concrete. A number of plants have no strict control over adherence to the project composition of the concrete, batching installations operate incorrectly, and there are no drive action mixers.

The new stage of industrialization of construction opened by the recent resolution of the CPSU Central Committee and the USSR Council of Ministers requires that each worker, scientist and engineer apply his maximum effort for improving the technical level and effectiveness of lightweight concrete house building.

The year 1986 must already become the breaking point in solving the problems at hand. The tasks of the all-union scientific-technical program on construction, the thematics of the leading scientific-research and design institutes, and the plans of construction ministries must all be aimed toward this end.

12322
CSO: 1821/105

CONSTRUCTION METHODS AND MATERIALS

TEMPORARY STRUCTURES FOR BUILDING SITES

The storage sheds and workers' dwellings at construction sites are often unattractive and uncomfortable. On an annual basis, 15 million square meters of these temporary dwellings are built, which requires the work of 150,000 workers and one-fifth of the standard time needed for work at construction sites. The industrial production of type mobile buildings to replace these temporary structures would help to shorten preparatory construction time, facilitate the transition to assembly techniques and save material and labor resources. There is already a capacity to produce 3.0 million square meters of such mobile units annually in the country. Although production of mobile buildings in 1985 exceeded the 1975 level by a factor of 2.3, demand is only half satisfied. Gosstroy has estimated that production must be increased to 5 million square meters by 1990 to satisfy demand. There are currently no prospects for meeting this need, since the current plan calls for production of 4.5 million square meters. Therefore attention must be devoted to fulfilling the plan to create new capacities and to put existing units to better use. However, several ministries are already lagging behind planned schedules for designing new production facilities and utilizing current capacities. Additional measures are needed in order to expedite production and technical development of mobile units. [Summary] [Moscow EKONOMICHESKAYA GAZETA in Russian No 7, Feb 85 p 18]

CSO: 1821/126

CONSTRUCTION METHODS AND MATERIALS

MARKET FOR CONSTRUCTION MATERIALS IN RURAL HOUSING

An article entitled "Housing Construction in the Village and the Market for Construction Materials" by S. Ignatyeva, senior scientific associate of the All-Union Scientific Research Institute for the Economics of Cooperative Trade, was published in Moscow SOVETSKAYA POTREBITELSKAYA KOOPERATSIYA in Russian No 12, December 1985 pages 16-19. For the full text of the article see USSR Report: CONSUMER GOODS AND DOMESTIC TRADE, JPRS-UCG-86-005, 12 March 1986, pages 43-49.

CSO: 1821/139

CONSTRUCTION METHODS AND MATERIALS

BRIEFS

PRODUCTION GOALS SET--It is planned that the production of cement in the building materials industry will reach 140 to 142 million tons by 1990 and its quality will be improved. The production of efficient building materials will be developed. Side recovery materials, recycled raw materials and waste products from other sectors will be used more extensively for producing building materials. There will be a gradual conversion to supplying products that have a high level of factory completeness. The assortment and amount of high-quality products that are supplied for the needs of the population will be expanded including local building materials. A goal is being set of increasing labor productivity in the sector by 16 to 18 percent and of decreasing the cost of products by 4 to 5 percent. [Text] [Moscow STROITEL'NAYA GAZETA in Russian 11 Dec 85 p 2] 9495

LENINGRAD FLOOD PROTECTION CONSTRUCTION--The flow of building materials that are going to construct the complex to protect Leningrad from floods has increased. Yesterday evening the first phase of a large concrete plant for the Leningrad Hydroenergy and Special Construction Administration was put into operation in Kronshtad. The enterprise is expected to produce 400,000 cubic meters of concrete annually which are of the best hydro-engineering types. About 500 million cubic meters of various materials will go into erecting the unique complex, the continuation of construction of which is specified in the draft of the Basic Directions for Economic and Social Development in the USSR. The extraction of sand from underwater areas will increase during the current five-year plan: new, more productive dredging machines have begun operations here. The development of an additional granite open pit mine on the Karel Isthmus is being completed. The concrete plant was also built on the northern bank and the construction of another one on the south bank is being completed. [By S. Davydov] [Text] [Leningrad LENINGRADSKAYA PRAVDA in Russian 9 Jan 86 p 1] 9495

CERAMIC WALL MATERIAL PRODUCTION--When developing new capacities great attention was given by production organizations to enterprises that have the most advanced products--hollow and face brick. During the process of technically retooling enterprises several social problems were also solved that will aid in improving everyday conditions for workers and for fortifying personnel. Completion of the first phase of technical retooling for the brick enterprises made it possible to increase the output of products by 30 percent, improve the output of a single worker per year by 25 percent, increase the relative proportion of hollow products in the total amount of ceramic wall materials being produced from 15.9 to 50.9 percent and face materials from 3.5

to 9.5 percent and to improve the average grade of brick from 97 to 114 kilograms per square centimeter in 1984 in comparison with 1970. [Excerpts] [Moscow STROITELNYYE MATERIALY in Russian No 11, Nov 85 p 2] [COPYRIGHT: Stroyizdat, 1985] 9495

'MOBIL' SERIES HOUSES--Shadrinsk (Kurgansk Oblast) (TASS)--The Shadrinsk Large-Panel House Building Plant has become operational. The first production from this enterprise has been shipped to the construction sites of the oblast. The equipment with which the new production is outfitted ensures a high level of mechanization and automation of technological processes. The plant conveyor is "geared" to the output of parts for the "Mobil" series, developed by Kiev architects. The primary advantage of this series consists of its assembly unification. Only one-third type sizes of products is required for the assembly of such buildings as compared with ordinary large-panel houses. The rate of housing construction is accelerated accordingly. [Text] [Moscow STROITELNAYA GAZETA in Russian 20 Dec 85 p 3] 12322

BELORUSSIAN CERAMIC PRODUCTS PLANT--Minsk--The first boxcars loaded with production from the new Belorussian Sanitary-Ceramic Products Plant have gone off to the consumers. This enterprise, which is part of the "Minskstroymaterialy" Association, has a high degree of mechanization of production processes, and manual labor is almost entirely excluded here. Next year the plant will manufacture 370,000 pieces of porcelain dishware. The plant became operational 3 months ahead of the plan schedule, as outlined by the integrated brigade which built it, headed by bearer of the Order of Labor Glory III degree I. Biyutsa from the "Minskpromstroy" Association. [By V. Perzashkevich] [Text] [Moscow STROITELNAYA GAZETA in Russian 24 Nov 85 p 2] 12322

CERAMIC MASONRY MATERIALS PLANT--Chelyabinsk--The construction of yet another building industry enterprise has begun in Chelyabinsk--a plant for manufacturing ceramic masonry materials. Its capacity will be 75 million pieces of solid and hollow brick per year. The new enterprise, which is to be placed into operation in 1987, is being outfitted with the most current equipment. All the production processes--forming the products, drying them, burning, packing, and other operations--will be fully mechanized and automated. This will make it possible to more than double the labor productivity and significantly reduce the expenditure of electrical energy and gas. [By V. Rozhkov, chief engineer of the Orgtekhstroy Trust, Glavyuzhuralstroy] [Text] [Moscow STROITELNAYA GAZETA 20 Dec 85 p 3] 12322

GLASS PLANT MODERNIZED--Borsk--The collective at the Borsk Glass Plant imeni Gorky has in good time provided reserves for increasing the effectiveness of production in the 12th Five-Year Plan. Based on the introduction of new engineering and technology and mechanization and automation of manual labor, 400 people will be liberated. They will be transferred to new work stations with expansion of production. Specifically, there are plans to introduce

into operation a modern line for thermal forming of polarized glass and to assimilate its capacities of 10 million square meters of production per year ahead of schedule. [Text] [Moscow STROITELNAYA GAZETA in Russian 24 Nov 85 p 2] 12322

GLASS PLANT EXCEEDS PLAN--(Kalinin)--The collective at the Kalinin Glass Plant has fulfilled its five-year plan assignment for the manufacture of goods of cultural-domestic and household function ahead of schedule. Due to increased effectiveness of labor and more complete application of internal reserves, 3.2 million rubles of production will be manufactured in excess of the plan. [By V. Illarionov] [Text] [Moscow STROITELNAYA GAZETA in Russian 27 Dec 85 p 3] 12322

CORRUGATED CONSTRUCTION SLABS--Polevskoy (Sverdlovsk Oblast)--A semi-conveyor line for the manufacture of corrugated slabs for coverings of production buildings has been placed into operation at the Seversk Reinforced Concrete Products Plant of the Stroydetal-70 Trust. It was created according to a new technology developed by the Tula Experimental Design Bureau of the USSR Ministry of Construction of Heavy Industry Enterprises and makes it possible to significantly reduce the time required for auxiliary operations. The new semi-conveyor line is experimental, and designers are working on perfecting it together with plant workers. However, we already say today that the innovation will make it possible to increase the production of corrugated slabs and will facilitate the labor of many people. [By V. Pankratov] [Text] [Moscow STROITELNAYA GAZETA in Russian 27 Dec 85 p 3] 12322

ACID RESISTANT CONCRETE--Pervouralsk--A new acid resistant concrete has been obtained at the Pervouralsk Reinforced Concrete Products and Structures Plant. The brigade of foreman S. Smirnov performed experimental molding of this concrete, and has proceeded to a work mode. The products based on perlite are 10 times stronger and more durable than ordinary concrete. They will be used for the production of electrolysis baths and suspended gantries in copper smelting combines. The decision has been made to manufacture 1,000 cubic meters of such production prior to the end of the year. The plant's innovators are once again seeking the most economical "recipes" for concrete with the application of superplasticizers. [By A. Pestov, chairman of the brigade worker council] [Text] [Moscow STROITELNAYA GAZETA in Russian 27 Dec 85 p 3] 12322

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